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## BLACK & VEATCH Waste Science, Inc.

400 Northridge Road, Suite 350, Atlanta, Georgia 30350, (770) 594-2500, Fax: (770) 587-2930

US EPA -- Region IV  
Site Inspection Prioritization  
Work Assignment No. 12

BVWS Project 52012.523  
November 22, 1995

Mr. Robert Jourdan  
Chief, North Superfund Remedial Branch  
U.S. Environmental Protection Agency  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Subject: Final Site Inspection Prioritization  
Metal Resources, Inc.  
Loudon, Loudon County, Tennessee  
EPA ID TND991279746

Dear Mr. Jourdan:

Enclosed please find one copy of the Final Site Inspection  
Prioritization for Metal Resources, Inc. in Loudon, Loudon County,  
Tennessee. If you have any questions, please contact me at 404/43-2320.

Very truly yours,

BLACK & VEATCH Waste Science, Inc.

Victor Blix  
Project Manager

SW  
Enclosures

cc: Doug Thompson, EPA PO, w/o enclosures  
Deborah Davidson, EPA CO, w/o enclosures  
Earl Bozeman, EPA WAM, w/o enclosures



## BLACK & VEATCH Waste Science, Inc.

2300 Clayton Road, Suite 1280, Concord, California 94520-2100, (510) 246-8010, Fax: (510) 246-8082

U.S. Environmental Protection Agency  
Metal Resources, Inc.  
Work Assignment 12

BVWS Project 52012.523  
April 10, 1995

Mr. Narindar Kumar, Chief  
Site Assessment Section  
U.S. Environmental Protection Agency  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Subject: Site Inspection Prioritization  
Metal Resources, Inc.  
Loudon, Loudon County, Tennessee  
EPA ID TND991279746

Dear Mr. Kumar:

BLACK & VEATCH Waste Science, Inc. (Black & Veatch) has been tasked by the U.S. Environmental Protection Agency (EPA) to conduct a Site Inspection Prioritization for the Metal Resources, Inc. (Metal Resources) site (the site) in Loudon, Loudon County, Tennessee. In accordance with the scope of work, a preliminary Hazard Ranking System (HRS) score was prepared to determine the need for future activities at the site.

The site is located on Highway 2 North in Loudon, Tennessee in the Blair Bend Industrial Park (Ref. 1, p. 6). From approximately 1981 to 1990, Metal Resources refined scrap aluminum at the site (Refs. 2, p. 1; 3). Prior to 1981, the site was undeveloped farm and forest land (Ref. 2, p. 1). Metal Resources filed a Resource Conservation Recovery Act (RCRA) Part A application for the site in 1981, but withdrew the permit in 1982 after determining that it did not generate hazardous materials (Ref. 1, p. 1). Metal Resources, Inc. ceased operations at the site in 1990 and moved its facilities to a new site located approximately 0.5 mile south of the original location (Ref. 4, p. 5). Based on observations made during an offsite reconnaissance conducted on February 5, 1995, by Black & Veatch personnel, the site is currently an unoccupied, vacant lot with no indications of past activities evident (Ref. 4, p. 6).

On November 30, 1983, an inspection by the Tennessee Department of Health and Environment, Division of Solid Waste Management (DSWM) concluded that no hazardous wastes were generated, treated, or stored at the site as the result of refining operations (Ref. 1, p. 1). A later visit to the site by DSWM on June 14, 1984, reported that due to the relatively recent start date of Metal Resources and the lack of a past history of development, this site does not fall under the RCRA program (Ref. 2, p. 1). Available file material does not indicate that environmental samples were collected during the inspections conducted at the site. File material does not indicate whether any uncontrolled spills occurred at the site.

Potable water within a 4-mile radius of the site is supplied by surface water along with municipal springs and private groundwater wells (Ref. 4, pp. 9, 11, 13, 15). Wells in the area are typically completed in the fractured regolith surficial aquifer (Refs. 3, p. 2; 4, p. 13). There are two municipal drinking water springs within 4 miles of the site: the Piney Utilities spring, which is located 1.75 miles south of the site and provides water to approximately 2,870 people, and the Loudon City Water System (LCWS) spring located 3.5 miles west of the site, which serves approximately 584 people (Refs. 4, pp. 11, 13; 5; 6). LCWS also obtains potable water from a surface water intake located on the Tennessee River (Ref. 4, p. 13). The nearest private well is located approximately 1.5 miles south of the site (Ref. 5). The estimated number of people using private wells and springs for drinking water was based on a house count from topographic maps of areas not serviced by municipal water systems (Refs. 5; 6). The estimated total population using drinking water derived from municipal springs and private wells within a 4-mile radius of the site is radially distributed as follows: 0 - 0.25 mile, 0 persons; 0.25 - 0.50 mile, 0 persons; 0.50 - 1 mile, 0 persons; 1 - 2 miles, 3,010 persons; 2 - 3 miles, 231 persons; 3 - 4 miles, 1,092 persons (Refs. 4, pp. 9, 11, 13, 15; 5; 6).

Surface water runoff from the site flows overland approximately 2,000 feet west before entering the Tennessee River at Watts Bar Lake (Tennessee River Mile Marker 592) (Ref. 5). Flow continues west along the Tennessee River for the remainder of the 15-mile surface water pathway (Ref. 5). The Loudon City Water System operates a surface water intake located on the opposite bank of the Tennessee River directly across from the probable point of entry (Refs. 4, p. 13; 5). This surface water intake provides

water to approximately 5,258 people (Refs. 4, p. 13; 6). No other surface water intakes are located along the surface water pathway. The flow rate of the Tennessee River at Watts Barr Lake varies between 300 and 1,000 cubic feet per second (Ref. 7). The Tennessee River at Watts Bar Lake is used for commercial fishing and has an annual yield of approximately 55,500 pounds (Ref. 8). The site is estimated to reside within the 500-year floodplain of the Tennessee River (Ref. 9). The habitats of the federally endangered pink mucket mussel (*Lampsilis abrupta*) and the federally threatened snail darter (*Percina tanasi*) have been identified along the 15-mile surface water pathway (Ref. 10, pp. 5, 6). No wetlands have been identified along the 15-mile surface water pathway (Refs. 5; 10, p. 5).

The estimated population within a 4-mile radius of the site is 8,197, and is radially distributed as follows: 0 - 0.25 mile, 58 persons; 0.25 - 0.50 mile, 135 persons; 0.50 - 1 mile, 1,067 persons; 1 - 2 miles, 2,254 persons; 2 - 3 miles, 5,001; 3 - 4 miles, 928 persons (Ref. 11). The nearest residence is located approximately 0.75 mile south of the site (Ref. 5). It is estimated that fewer than 100 persons were employed at the site during its operational years. The site is currently unfenced and easily accessible; however, public use of the site for recreational or other purposes is unlikely (Ref. 4, p. 6). No wetlands or endangered or threatened species have been identified within the 4-mile radius of the site (Ref. 5).

Due to the low number of pathway targets and low overall site score, no further action is recommended at the Metal Resources, Inc. site. Attached are all references used during this evaluation.



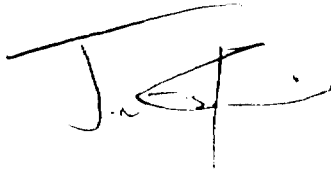
Metal Resources, Inc.

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If you have any questions or comments, please contact me at (510) 246-8010 or Victor Blix at (404) 643-2320.

Sincerely,

BLACK & VEATCH Waste Science, Inc.

A handwritten signature in black ink, appearing to read "J. Erskine", with a stylized flourish extending from the end.

Jon Erskine  
Site Geologist

skr  
Enclosure

## REFERENCES

1. State of Tennessee, Department of Public Health, Division of Solid Waste Management, Potential Hazardous Waste Site Preliminary Assessment Worksheet, Metal Resources, Inc., TND991279746, November 30, 1983.
2. Davis, Kenneth R., State of Tennessee, Department of Public Health, Division of Solid Waste Management, Office Correspondence, June 14, 1984. Subject: Metal Resources, Inc., TND991279746.
3. NUS Corporation, Draft Screening Site Inspection, Phase 1, Metal Resources, Inc., EPA ID No. TND991279746, March 1, 1990.
4. Erskine, Jon, BLACK & VEATCH Waste Science, Inc., Logbook for Documentation of Metal Resources, Inc. Site Visit, February 5-7, 1995.
5. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee: Cave Creek 1968 (Photorevised 1989); Philadelphia 1974; Lenoir City 1968 (Photorevised 1986); Loudon 1952 (Photorevised 1984); scale 1:24,000.
6. U.S. Department of Commerce, Bureau of the Census, 1990 Census of Population and Housing Summary Population and Housing Characteristics, Tennessee, 1990 CPH-1-44, August 1991, p. 63.
7. U.S. Geological Survey, Water Resources Data, Tennessee Water Year 1993. Water-Data Report TN-93-1 (Nashville, Tennessee 1994).
8. Tennessee Wildlife Resources Agency, Fisheries Report, 94-14, 1993 Commercial Fishing Report, March 1994.
9. U.S. Department of Housing and Urban Development, Flood Insurance Rate Map: Town of Loudon, Tennessee, Loudon County.
10. ERCE, Report of Survey For: Threatened and Endangered Species, Wetlands, Stream Identification at a Proposed Solid Waste Landfill Site, Blair Bend Industrial Park, Loudon County, Tennessee, December 1991.

11. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base. Compiled from U.S. Bureau of the Census data, 1983.

**CONFIDENTIAL**  
**Hazard Ranking System Preliminary Score**  
for  
**METAL RESOURCES, INC.**  
**Loudon, Loudon County, Tennessee**  
EPA ID TND991279746

The preliminary HRS score for the Metal Resources, Inc. site was calculated using the Site Inspection Worksheets. Pathways evaluated include groundwater migration, surface water migration, soil exposure, and air migration. Reportedly, no hazardous wastes were generated, treated, stored, or disposed at the site. Furthermore, file material does not indicate the presence of any hazardous substance at the site at any time. In addition, no environmental samples have been collected at the site. Therefore, due to the lack of data from the site, Maximum Waste Characteristics were used to evaluate each pathway. A Hazardous Waste Quantity (HWQ) factor value of 10 was assigned for all pathways based on the total area of the site (approximately 5 acres).

The groundwater migration pathway HRS score is based on an assumed observed release to the fractured regolith aquifer underlying the site. An observed release was assumed to evaluate worst case conditions at the site. Non-karst target values were used for scoring purposes. There are two municipal springs located within 4 miles of the facility; the Piney Utilities spring, which is located 1.75 miles south of the site and provides water to 2,870 people, and the Loudon City Water System spring, which is located 3.5 miles west of the site and provides water to an estimated 584 people. Potential private groundwater users were determined based on a house count of areas not serviced by municipal water. Approximately 4,333 people are estimated to obtain water from private wells and springs within the 4-mile radius. Low target values resulted in a low groundwater pathway score.

The surface water migration pathway HRS score was based on a potential release and low target values derived from downstream populations, sensitive environments, and recreational fishing areas. The location of the probable point of entry along the Tennessee River was assumed based on the area's topographic features. However, other probable points of entry are also likely due to drainage impediments such as roads and sewers within the city of Loudon. The City of Loudon Water System obtains its water solely from one surface water intake located on the opposite bank of the Tennessee River, directly across the assumed probable point of entry.

The soil exposure pathway was evaluated based on an assumed release to surficial soils. The pathway score was limited by the lack of a resident population and low nearby population target values.

The air migration pathway was scored based on potential to release. Approximately 8,197 people reside within 4 miles of the site. No wetlands or designated threatened or endangered species have been specifically identified within a 4-mile radius of the site.

Due to low target values and a low overall site score, no further action is recommended at the site. An observed release to surface water scenario was not scored due to the low likelihood of runoff reaching the Tennessee River. The site is surrounded by roads, gas stations, and large factories, which would alter the natural direction of runoff and decrease the probability of runoff reaching the river. An observed release to surface water would elevate the surface water pathway score and slightly increase the overall site score; however, the overall site score would still be below 28.5 (16.5). Due to the low sensitivity of the site score to an observed release to surface water, and the difficulty of directly attributing sample results to the site given its industrial setting, sampling is not recommended at the site.

## **HRS SCORING SUMMARY**

$S_{gw}$	=	14.29
$S_{sw}$	=	0.69
$S_{soil}$	=	0.003
$S_{air}$	=	2.06

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**OVERALL SCORE = 7.23**

Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors		Maximum Value	Value Assigned
Likelihood of Release			
1	Observed Release	550	550
2	Potential to Release		
2a.	Containment	10	10
2b.	Net Precipitation	10	6
2c.	Depth to Aquifer	5	3
2d.	Travel Time	35	15
2e.	Potential to Release [(lines 2a x (2b + 2c + 2d)]	500	240
3	Likelihood of Release (higher of lines 1 and 2e)	550	550
Waste Characteristics			
4.	Toxicity/Mobility	a	10,000
5.	Hazardous Waste Quantity	a	10
6.	Waste Characteristics	100	18
7.	Nearest Well	50	5
8	Population		
8a.	Level I Concentrations	b	0
8b.	Level II Concentrations	b	0
8c.	Potential Contamination	b	109.1
8d.	Population (lines 8a + 8b + 8c)	b	109.1
9.	Resources	5	5
10.	Wellhead Protection Area	20	0
11.	Targets (lines 7 + 8d + 9 + 10)	b	119.1
<b>Ground Water Migration Score for an Aquifer</b>			
12.	Aquifer Score [(lines 3 x 6 x 11)/82,500] <sup>c</sup>	100	14.29
<b>Ground Water Migration Pathway Score</b>			
13.	Pathway Score (SGW), (highest value from line 12 for all aquifers evaluated) <sup>c</sup>	100	14.29

a Maximum value applies to waste characteristics category

b Maximum value not applicable

c Do not round to nearest integer

Site Name Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

### Drinking Water Threat

Factor Categories and Factors		Maximum Value	Value Assigned
Likelihood of Release			
1.	Observed Release	550	0
2	Potential to Release by Overland Flow		
2a.	Containment	10	10
2b.	Runoff	25	11
2c.	Distance to Surface Water	25	9
2d.	Potential to Release by Overland Flow [(lines 2a x (2b + 2c)]	500	200
3	Potential to Release by Flood		
3a.	Containment (Flood)	10	10
3b.	Flood Frequency	50	7
3c.	Potential to Release by Flood (lines 3a x 3b)	500	70
4.	Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	270
5	Likelihood of Release (higher of lines 1 and 4)	550	270

### Waste Characteristics

6.	Toxicity/Persistence	a	10,000
7	Hazardous Waste Quantity	a	10
8	Waste Characteristics	100	18

### Targets

9	Nearest Intake	50	0
10	Population		
10a.	Level I Concentrations	b	0
10b.	Level II Concentrations	b	0
10c.	Potential Contamination	b	5.2
10d.	Population (lines 10a + 10b + 10c)	b	5.2
11.	Resources	5	5
12.	Targets (lines 9 + 10d + 11)	b	10.2

### Drinking Water Threat Score

13.	Drinking Water Threat Score [(lines 5 x 8 x 12)/82,500], subject to a maximum of 100)	100	0.6
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Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET (CONTINUED)

### Human Food Chain Threat

Factor Categories and Factors	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same value as line 5)	550	270
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	a	5E+08
16. Hazardous Waste Quantity	a	10
17. Waste Characteristics	1000	180
Targets		
18. Food Chain Individual	50	0
19. Population		
19a. Level I Concentrations	b	0
19b. Level II Concentrations	b	0
19c. Potential Contamination	b	0
19d. Population (lines 10a + 10b + 10c)	b	0
20. Targets (lines 18 + 19d)	b	0
Human Food Chain Threat Score		
21. Human Food Chain Threat Score [(lines 14 x 17 x 20)/82,500], subject to a maximum of 100)	100	0



Site Name Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET (CONTINUED)

### Environmental Threat

Factor Categories and Factors	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same value as line 5)	550	270
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	a	5E+08
24. Hazardous Waste Quantity	a	10
25. Waste Characteristics	1,000	180
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	b	0
26b. Level II Concentrations	b	0
26c. Potential Contamination	b	0.15
26d. Sensitive Environments (lines 26a + 26b + 26c)	b	0.15
27. Targets (value from line 26d)	b	0.15

### Environmental Threat Score

28. Environmental Threat Score [(lines 22 x 25 x 27)/ 82,500, subject to a maximum score of 60]	60	0.09
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### Surface Water Overland/Flood Migration Component Score for a Watershed

29. Watershed Score (lines 13 + 21 + 28, subject to a maximum score of 100)	100	0.69
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### Surface Water Overland/Flood Component Score

30. Component Score (SSW)c (highest score from line 29 for all watersheds evaluated, subject to a maximum score of 100)	100	0.69
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- a. Maximum value applies to waste characteristics category
- b. Maximum value not applicable
- c. Do not round to nearest integer

Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SOIL EXPOSURE PATHWAY SCORESHEET

### Resident Population Threat

Factor Categories and Factors	Maximum Value	Value Assigned
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#### Likelihood of Release

1. Likelihood of Exposure	550	550
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#### Waste Characteristics

2. Toxicity	a	10,000
3. Hazardous Waste Quantity	a	10
4. Waste Characteristics	100	18

#### Targets

5. Resident Individual	50	0
6. Resident Population		
6a. Level I Concentrations	b	0
6b. Level II Concentrations	b	0
6c. Resident Population (lines 6a + 6b)	b	0
7. Workers	15	0
8. Resources	5	0
9. Terrestrial Sensitive Environments	c	0
10. Targets (lines 5 + 6c + 7 + 8 + 9)	b	0

### Resident Population Threat Score

11. Resident Population Threat [(lines 1 x 4 x 10)/82,500]	b	0
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Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

### SOIL EXPOSURE PATHWAY SCORESHEET (continued)

#### **Nearby Population Threat**

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
12. Attractiveness/Accessibility	100	<u>10</u>
13. Area of Contamination	100	<u>20</u>
14. Likelihood of Exposure	500	<u>5</u>

#### **Waste Characteristics**

15. Toxicity	a	<u>10,000</u>
16. Hazardous Waste Quantity	a	<u>10</u>
17. Waste Characteristics	100	<u>18</u>

#### **Targets**

18. Nearby Individual	1	<u>1</u>
19. Population Within 1 Mile	b	<u>1.3</u>
20. Targets (lines 18 + 19)	b	<u>2.3</u>

#### **Nearby Population Threat Score**

21. Nearby Population Threat (lines 14 x 17 x 20)/(82,500)	b	<u>0.003</u>
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#### **Soil Exposure Pathway Score**

22. Soil Exposure Pathway Score (SS), (lines 11 + 21, subject to a maximum score of 100)	100	<u>0.003</u>
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a Maximum value applies to waste characteristics category.

b Maximum value not applicable.

c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum score of 60.

d Do not round to nearest integer.

Site Name: Metal Resources, Inc

Location: Loudon, Loudon County, Tennessee

### AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	
2b. Particulate Potential to Release	500	0
2c. Potential to Release (higher of lines 2a and 2b)	500	0
3. Likelihood of Release (higher of lines 1 and 2c)	550	500

#### Waste Characteristics

4. Toxicity/Mobility	a	10,000
5. Hazardous Waste Quantity	a	10
6. Waste Characteristics	100	18

#### Targets

7. Nearest Individual	50	7
8. Population		
8a. Level I Concentrations	b	0
8b. Level II Concentrations	b	0
8c. Potential Contamination	b	6.87
8d. Population (lines 8a + 8b + 8c)	b	6.87
9. Resources	5	5
10. Sensitive Environments		
10a. Actual Contamination	c	0
10b. Potential Contamination	c	0
10c. Sensitive Environments (lines 10a + 10b)	c	0
11. Targets (lines 7 + 8d + 9 + 10c)	b	18.87

#### Air Migration Pathway Score

12. Pathway Score (SA) [(lines 3 x 6 x 11)/82,500]d	100	2.06
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a Maximum value applies to waste characteristics category

b Maximum value not applicable

c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum score of 60.

d Do not round to nearest integer

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## SITE INSPECTION WORKSHEETS

<b>CERCLIS IDENTIFICATION NUMBER</b>
TND 991279746

SITE LOCATION			
SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE Metal Resources Inc.			
STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFIER P.O. Box 386, Blair Bend Industrial Park			
CITY Loudon	STATE TN	ZIP CODE 37776	TELEPHONE ( )
COORDINATES: LATITUDE and LONGITUDE 35° 44' 39" / 84° 18' 40"		TOWNSHIP, RANGE, AND SECTION	

OWNER/OPERATOR IDENTIFICATION					
OWNER Same			OPERATOR		
OWNER ADDRESS			OPERATOR ADDRESS		
CITY			CITY		
STATE	ZIP CODE	TELEPHONE ( )	STATE	ZIP CODE	TELEPHONE ( )

SITE EVALUATION		
AGENCY/ORGANIZATION USEPA Region IV		
INVESTIGATOR Black & Veatch Waste Science		
CONTACT Jo. Est. . .		
ADDRESS 2300 Clayton Rd Suite 1280		
CITY Concord	STATE CA	ZIP CODE 94520
TELEPHONE (510) 246-8010		

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## GENERAL INFORMATION

**Site Description and Operational History:** Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

See Report

## GENERAL INFORMATION (continued)

**Site Sketch:** Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.

See Report

## GENERAL INFORMATION (continued)

**Source Descriptions:** Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

## SOURCE TYPES

**Landfill:** A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

**Surface Impoundment:** A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

**Drum:** A portable container designed to hold a standard 55-gallon volume of wastes.

**Tank and Non-Drum Container:** Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

**Contaminated Soil:** An area or volume of soil onto which hazardous substances have been spilled, spread, disposed, or deposited.

**Pile:** Any non-containerized accumulation above the ground surface of solid, non-flowing wastes; includes open dumps. Some types of waste piles are:

- **Chemical Waste Pile:** A pile consisting primarily of discarded chemical products, by-products, radioactive wastes, or used or unused feedstocks.
- **Scrap Metal or Junk Pile:** A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- **Tailings Pile:** A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- **Trash Pile:** A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

**Land Treatment:** Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

**Other:** Sources not in categories listed above.



For some sites, the manner in which the waste was deposited (e.g., creation of a waste pile) would be a primary defining characteristic and it would be appropriate to score the source type as a waste pile.

S-45

**Issue:** What are some definitions that can be used to assist in identifying and characterizing the source(s) at a site?

**Preliminary Resolution:** The following definitions are provided:

Active Fire Area: An area that is presently burning or smoldering and which, without remedial action, will continue to do so intently.

Buried/Below-ground Containers or Tanks: A container or tank the entire surface area of which is situated completely below the surface and which is not visible; however, a buried/below-ground tank may have a small fraction of its associated piping above the surface.

Buried/Backfilled Surface Impoundment: A surface impoundment that has been completely covered with soil after final deposition of waste materials.

Burn Pit: An uncovered area on or on the land surface that was at one time used to burn waste materials or was otherwise significantly inflamed but is not presently burning.

Containers or Tanks: (1) Any stationary device designed to contain an accumulation of waste, which is constructed primarily of non-earthen materials (such as wood, concrete, steel, or plastic) which provides structural support. (2) Any portable device in which waste is stored or otherwise handled.

Contaminated Soil (excluding land treatment): (1) An area of soil that contains concentrations of a hazardous substance significantly above background. Evidence that the substance detected is related to the site must be provided to substantiate use of this descriptor. (2) An area on which available evidence demonstrates that hazardous substances were spilled. Note: somewhat similar to area of observed contamination but without the requirement that the hazardous substance be located within two feet of the surface.

Landfarm/Land treatment: Landfarming or land treatment is a method of waste management in which liquid waste or sludges are spread over land and tilled. It also applies to the shallow injection of liquids. The distinguishing characteristics of landfarms and land treatment facilities is the shallow injection or tilling of the soil.

Landfill: A landfill may be either a cleared area on the ground surface or a man-made or natural hole in the ground, containing wastes. The landfill may have been backfilled with the soil either after or contemporary with the waste disposal, covering the wastes from view. The landfill may have been formed either by excavating the hole or by forming earthen walls around a cleared area. Due to weathering, erosion, and similar phenomena, however, once-

buried wastes in a landfill may become exposed, e.g., partially buried drums. The contents of a landfill may include nearly any or all types of wastes including buried drums.

Piles (by type):

Chemical Waste Pile: A pile consisting primarily of discarded chemical products (whether marketable or not), by-products, or unused feedstocks.

Scrap Metal or Junk Pile: A pile consisting primarily of scrap metal or discarded durable goods such as appliances, automobiles or auto parts, and furniture.

Tailings Pile: A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.

Trash Pile: A pile consisting of primarily paper, garbage, or discarded non-durable goods such as food packaging (e.g., "refuse").

Other: A term reserved for use when a pile of indeterminate origin has accumulated and is shown to contain certain hazardous substances, contaminants, pollutants, or radionuclides.

Surface Impoundment: A natural topographic depression, man-made excavation, bermed, or diked area, primarily formed from earthen materials (lined or unlined) which was designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges that were not backfilled or otherwise covered. The distinguishing characteristics of a surface impoundment are the emphasis on liquid waste and the general lack of soil cover. Two types of surface impoundments are distinguished: those at which the deposited liquid has evaporated, volatilized, or leached (dry) and those with exposed liquid (other). Synonymous terms include lagoon pond, aeration pit, settling pond, and tailings pond.

S-46 **Issue:** What are examples of "other" source types?

**Preliminary Resolution:** Anything not specifically listed or that does not clearly fit into one of the listed source types, e.g., contaminated buildings, contaminated surface water sediments with no identified source, and contaminated equipment. Additional other source types may include: storm drains, dry wells, injection wells, ground water plumes with no identified source, radioactively contaminated equipment, etc. (See also Preliminary Resolution S-48.)

S-47 **Issue:** Are seeps and leachate considered sources?

**Preliminary Resolution:** Seeps and leachate are migration from sources, not areas of deposition, and thus are not sources for the migration pathways. However, there is a

good probability that the soils beneath seeps and leachate are contaminated. For the purposes of scoring the soil exposure pathway, therefore, seeps and leachate of hazardous substances can be considered observed contamination of the surface.

Seeps and leachate are also useful in attributing observed releases to sources. In some cases, seeps and leachate have been used to establish observed releases by direct observation to ground water and/or surface water.

**S-48**      **Issue:** Are buildings contaminated with radioactive materials considered sources? If so, what type?

**Preliminary Resolution:** Yes, they would be in the "other" category of sources unless they fit a specific description (e.g., demolished building could be a pile).

**S-49**      **Issue:** Within a large source (e.g., landfill), what should be used as the starting point for measuring target distance limits?

**Preliminary Resolution:** For measuring target distances in pathways, use the source boundaries, which may be established in various ways (e.g., photographs, fill above grade). The exception would be ground water plumes and surface water sediments with no identified source.

- For such ground water plumes, use the center of the observed area of ground water contamination, as specified in Section 3.0.1.1 of the HRS rule.
- For such surface water sediments, if there is a clearly defined direction of flow, use the point of observed sediment contamination that is farthest upstream as specified in Section 4.1.1.2 of the HRS rule. If there is no clearly defined direction of flow, use the center of the area of observed sediment contamination as specified in Section 4.1.1.2 of the rule.

**S-50**      **Issue:** How is thickness of cover measured – maximum or minimum?

**Preliminary Resolution:** For purposes of scoring containment, thickness of cover is measured at the point of minimum thickness. In some cases, cracks may indicate a good place to measure the minimum thickness.

## GENERAL INFORMATION (continued)

**Source Description:** Include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

**Hazardous Waste Quantity (HWQ) Calculation:** SI Tables 1 and 2 (See HRS Tables 2-5; 2-6, and 5-2).

Attach additional pages, if necessary

HWQ =

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SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete	>100 to 10,000 lbs
		HWQ = 10 if Hazardous Constituent Quantity data are not complete	
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft <sup>3</sup> ≤ 250,000 yd <sup>3</sup>	>6.75 million to 675 million ft <sup>3</sup> >250,000 to 25 million yd <sup>3</sup>
	Surface impoundment	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
	Drums	≤ 1,000 drums	>1,000 to 100,000 drums
	Tanks and non-drum containers	≤ 50,000 gallons	>50,000 to 5 million gallons
	Contaminated soil	≤ 6.75 million ft <sup>3</sup> ≤ 250,000 yd <sup>3</sup>	>6.75 million to 675 million ft <sup>3</sup> >250,000 to 25 million yd <sup>3</sup>
	Pile	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
	Other	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
D Area	Landfill	≤ 340,000 ft <sup>2</sup> ≤ 7.8 acres	>340,000 to 34 million ft <sup>2</sup> >7.8 to 780 acres
	Surface impoundment	≤ 1,300 ft <sup>2</sup> ≤ 0.029 acres	>1,300 to 130,000 ft <sup>2</sup> >0.029 to 2.9 acres
	Contaminated soil	≤ 3.4 million ft <sup>2</sup> ≤ 78 acres	> 3.4 million to 340 million ft <sup>2</sup> > 78 to 7,800 acres
	Pile	≤ 1,300 ft <sup>2</sup> ≤ 0.029 acres	>1,300 to 130,000 ft <sup>2</sup> >0.029 to 2.9 acres
	Land treatment	≤ 27,000 ft <sup>2</sup> ≤ 0.62 acres	>27,000 to 2.7 million ft <sup>2</sup> >0.62 to 62 acres

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5)	(Column 6)	(Column 7) Divisors for Assigning Source WQ Values	(Column 2) Source Type	(Column 1) TIER
HWQ = 10,000	HWQ = 1,000,000			
>10,000 to 1 million lbs	> 1 million lbs	lbs + 1	N/A	A Hazardous Constituent Quantity
>50 million to 5 billion lbs	> 5 billion lbs	lbs + 5,000	N/A	B Hazardous Wastestream Quantity
>675 million to 67.5 billion ft <sup>3</sup> >25 million to 2.5 billion yd <sup>3</sup>	> 67.5 billion ft <sup>3</sup> > 2.5 billion yd <sup>3</sup>	ft <sup>3</sup> + 67,500 yd <sup>3</sup> + 2,500	Landfill	C Volume
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Surface Impoundment	
>100,000 to 10 million drums	> 10 million drums	drums + 10	Drums	
>5 million to 500 million gallons	> 500 million gallons	gallons + 500	Tanks and non-drum containers	
>675 million to 67.5 billion ft <sup>3</sup> >25 million to 2.5 billion yd <sup>3</sup>	> 67.5 billion ft <sup>3</sup> > 2.5 billion yd <sup>3</sup>	ft <sup>3</sup> + 67,500 yd <sup>3</sup> + 2,500	Contaminated Soil	
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Pile	
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Other	
>34 million to 3.4 billion ft <sup>2</sup> >780 to 78,000 acres	> 3.4 billion ft <sup>2</sup> >78,000 acres	ft <sup>2</sup> + 3,400 acres + 0.078	Landfill	D Area
>130,000 to 13 million ft <sup>2</sup> >2.9 to 290 acres	> 13 million ft <sup>2</sup> > 290 acres	ft <sup>2</sup> + 13 acres + 0.00029	Surface Impoundment	
> 340 million to 34 billion ft <sup>2</sup> > 7,800 to 780,000 acres	> 34 billion ft <sup>2</sup> > 780,000 acres	ft <sup>2</sup> + 34,000 acres + 0.78	Contaminated Soil	
> 130,000 to 13 million ft <sup>2</sup> > 2.9 to 290 acres	> 13 million ft <sup>2</sup> > 290 acres	ft <sup>2</sup> + 13 acres + 0.00029	Pile	
>2.7 million to 270 million ft <sup>2</sup> >62 to 6,200 acres	> 270 million ft <sup>2</sup> > 6,200 acres	ft <sup>2</sup> + 270 acres + 0.0062	Land Treatment	

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

## HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for ground water, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1 <sup>a</sup> to 100	1 <sup>b</sup>
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

<sup>a</sup> If the WQ total is between 0 and 1, round it to 1.

<sup>b</sup> If the hazardous constituent quantity data are not complete, assign the score of 10.

## SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: \_\_\_\_\_

### References

Sources:

1. \_\_\_\_\_ 4. \_\_\_\_\_ 7. \_\_\_\_\_  
2. \_\_\_\_\_ 5. \_\_\_\_\_ 8. \_\_\_\_\_  
3. \_\_\_\_\_ 6. \_\_\_\_\_ 9. \_\_\_\_\_

[illegible]

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#### **Ground Water Observed Release Substances Summary Table**

On SI Table 4, list the hazardous substances associated with the site detected in ground water samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

#### **Ground Water Actual Contamination Targets Summary Table**

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI Table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population using the well as a Level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a Level II target for that aquifer.

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/Mobility	References
Highest Toxicity/Mobility				

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

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Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Percent					Sum of Percents		Sum of Percents	

Well ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Percent					Sum of Percents		Sum of Percents	

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GROUND WATER PATHWAY  
GROUND WATER USE DESCRIPTION

1. The first step is to identify the problem. This involves understanding the situation and what needs to be solved.

2. Next, we need to gather information. This can be done through research, asking questions, or looking at data.

3. Once we have the information, we can start to think of solutions. It's important to consider different options and weigh their pros and cons.

4. After choosing a solution, we need to plan how to implement it. This might involve setting a timeline or assigning tasks.

5. Finally, we need to evaluate the results. Did the solution work? If not, what can we learn from the experience?

## GROUND WATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.	550		
2. POTENTIAL TO RELEASE: Depth to aquifer: <u>20</u> feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.	340		
LR =		550	

## TARGETS

Are any wells part of a blended system? Yes <u>    </u> No <u>    </u> If yes, attach a page to show apportionment calculations.			
3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5).  Level I: <u>    </u> people x 10 = <u>    </u> Level II: <u>    </u> people x 1 = <u>    </u> Total =			
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	109.1		
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	5		
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	5		
7. RESOURCES: Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies.  <ul style="list-style-type: none"> <li>• Irrigation (5 acre minimum) of commercial food crops or commercial forage crops</li> <li>• Watering of commercial livestock</li> <li>• Ingredient in commercial food preparation</li> <li>• Supply for commercial aquaculture</li> <li>• Supply for a major or designated water recreation area, excluding drinking water use</li> </ul>	5		
Sum of Targets T=	119.1		

TABLE J-1  
GROUND WATER MIGRATION PATHWAY SCORESHEET

## Factor Categories and Factors

<u>Likelihood of Release to an Aquifer</u>	<u>Maximum Value</u>	<u>Value Assigned</u>
1. Observed Release	550	_____
2. Potential to Release		
2a. Containment	10	<u>10</u>
2b. Net Precipitation	10	<u>6</u>
2c. Depth to Aquifer	5	<u>3</u>
2d. Travel Time	35	<u>15</u>
2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	<u>240</u>
3. Likelihood of Release (higher of lines 1 and 2e)	550	_____
<u>Waste Characteristics</u>		
4. Toxicity/Mobility	<sup>a</sup>	_____
5. Hazardous Waste Quantity	<sup>a</sup>	_____
6. Waste Characteristics	100	_____
<u>Targets</u>		
7. Nearest Well	50	_____
8. Population		
8a. Level I Concentrations	b	_____
8b. Level II Concentrations	b	_____
8c. Potential Contamination	b	_____
8d. Population (lines 8a + 8b + 8c)	b	_____
9. Resources	5	_____
10. Wellhead Protection Area	20	_____
11. Targets (lines 7 + 8d + 9 + 10)	b	_____
<u>Ground Water Migration Score for an Aquifer</u>		
12. Aquifer Score [(lines 3 x 6 x 11) / 82,500] <sup>c</sup>	100	_____
<u>Ground Water Migration Pathway Score</u>		
13. Pathway Score ( $S_{gw}$ ). (highest value from line 12 for all aquifers evaluated) <sup>c</sup>	100	_____

<sup>a</sup>Maximum value applies to waste characteristics category.

<sup>b</sup>Maximum value not applicable.

<sup>c</sup>Do not round to nearest integer.

TABLE 3-2  
CONTAINMENT FACTOR VALUES FOR GROUND WATER MIGRATION PATHWAY

<u>All Sources</u> (except surface impoundments, land treatment, containers, and tanks)	<u>Assigned Value</u>
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures).	10
No liner.	10
No evidence of hazardous substance migration from source area, a liner, and:	
(a) None of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.	10
(b) Any one of the three items in (a) present.	9
(c) Any two of the items in (a) present.	7
(d) All three items in (a) present plus a functioning ground water monitoring system.	5
(e) All items in (d) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, functioning ground water monitoring system, and:	
(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover.	3

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TABLE 3-2 (Continued)

<u>All Sources (Concluded)</u>	<u>Assigned Value</u>
(g) None of the deficiencies in (f) present.	0
Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present.	0

FIGURE 3.2

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TABLE 3-5  
DEPTH TO AQUIFER FACTOR VALUES

<u>Depth To Aquifer<sup>1</sup></u> <u>(feet)</u>	<u>Assigned</u> <u>Value</u>
Less than or equal to 25	5
Greater than 25 to 250	3
Greater than 250	1

<sup>1</sup>Use depth of all layers between the hazardous substances and aquifer. Assign a thickness of 0 feet to any karst aquifer that underlies any portion of the sources at the site.

TABLE 3-6  
HYDRAULIC CONDUCTIVITY OF GEOLOGIC MATERIALS

Type of Material	Assigned Hydraulic Conductivity <sup>a</sup> (cm/sec)
Clay; low permeability till (compact unfractured till); shale; unfractured metamorphic and igneous rocks	$10^{-8}$
Silt; loesses; silty clays; sediments that are predominantly silts; moderately permeable till (fine-grained, unconsolidated till, or compact till with some fractures); low permeability limestones and dolomites (no karst); low permeability sandstone; low permeability fractured igneous and metamorphic rocks	$10^{-6}$
Sands; sandy silts; sediments that are predominantly sand; highly permeable till (coarse-grained, unconsolidated or compact and highly fractured); peat; moderately permeable limestones and dolomites (no karst); moderately permeable sandstone; moderately permeable fractured igneous and metamorphic rocks	$10^{-4}$
Gravel; clean sand; highly permeable fractured igneous and metamorphic rocks; permeable basalt; karst limestones and dolomites	$10^{-2}$

<sup>a</sup>Do not round to nearest integer.

TABLE 3-7  
TRAVEL TIME FACTOR VALUES<sup>a</sup>

Hydraulic Conductivity (cm/sec)	Thickness of Lowest Hydraulic Conductivity Layer(s) <sup>b</sup> (feet)			
	Greater than 3 to 5	Greater than 5 to 100	Greater than 100 to 500	Greater than 500
Greater than or equal to $10^{-3}$	35	35	35	25
Less than $10^{-3}$ to $10^{-5}$	35	25	15	15
Less than $10^{-5}$ to $10^{-7}$	15	15	5	5
Less than $10^{-7}$	5	5	1	1

<sup>a</sup>If depth to aquifer is 10 feet or less or if, for the interval being evaluated, all layers that underlie a portion of the sources at the site are karst, assign a value of 35.

<sup>b</sup>Consider only layers at least 3 feet thick. Do not consider layers or portions of layers within the first 10 feet of the depth to the aquifer.

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER  
TARGET POPULATIONS

SI Table 6a: Other Than Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000		
0 to $\frac{1}{4}$ mile	-	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
$> \frac{1}{4}$ to $\frac{1}{2}$ mile		18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$> \frac{1}{2}$ to 1 mile		9	1	5	17	52	167	523	1,669	5,224	16,684	52,239	166,835	522,385		
$> 1$ to 2 miles		5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842		
$> 2$ to 3 miles		3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219		
$> 3$ to 4 miles	1092	2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596	131	
Nearest Well =															Sum =	
															1091	

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SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER  
TARGET POPULATIONS (continued)

SI Table 6b: Karst Aquifers

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Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
$> \frac{1}{4}$ to $\frac{1}{2}$ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$> \frac{1}{2}$ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 1$ to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 2$ to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 3$ to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
Sum =																
Nearest Well =																

## GROUND WATER PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS	Score	Data Type	Does not Apply																						
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	100																								
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	100																								
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)																									
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Product</th> <th style="text-align: center;">WC Score</th> </tr> </thead> <tbody> <tr><td>0</td><td style="text-align: center;">0</td></tr> <tr><td>&gt;0 to &lt;10</td><td style="text-align: center;">1</td></tr> <tr><td>10 to &lt;100</td><td style="text-align: center;">2</td></tr> <tr><td>100 to &lt;1,000</td><td style="text-align: center;">3</td></tr> <tr><td>1,000 to &lt;10,000</td><td style="text-align: center;">6</td></tr> <tr><td>10,000 to &lt;1E + 05</td><td style="text-align: center;">10</td></tr> <tr><td>1E + 05 to &lt;1E + 06</td><td style="text-align: center;">18</td></tr> <tr><td>1E + 06 to &lt;1E + 07</td><td style="text-align: center;">32</td></tr> <tr><td>1E + 07 to &lt;1E + 08</td><td style="text-align: center;">56</td></tr> <tr><td>1E + 08 or greater</td><td style="text-align: center;">100</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to <10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 or greater	100			
Product	WC Score																								
0	0																								
>0 to <10	1																								
10 to <100	2																								
100 to <1,000	3																								
1,000 to <10,000	6																								
10,000 to <1E + 05	10																								
1E + 05 to <1E + 06	18																								
1E + 06 to <1E + 07	32																								
1E + 07 to <1E + 08	56																								
1E + 08 or greater	100																								
WC =	100																								

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE:

$$\frac{(55) \cdot 100 \cdot 100}{82,500}$$

14.67

(Maximum of 100)

## SURFACE WATER PATHWAY

**Sketch of the Surface Water Migration Route:**  
 Label all surface water bodies. Include runoff route and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.



\* The 15-mile target distance limit is based on the 15-mile target distance limit for the 15-mile target distance limit.

## **SURFACE WATER PATHWAY**

### **Surface Water Observed Release Substances Summary Table**

On SI Table 7, list the hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x Persistence
- TPB = TP x bioaccumulation
- ETPB = EP x bioaccumulation (EP = ecotoxicity x persistence)

### **Drinking Water Actual Contamination Targets Summary Table**

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment samples detecting a hazardous substance at or beyond an intake, evaluate the intake as Level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all are N/A, evaluate the population served by the intake as a Level II target.



[illegible]

Intake ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Percent					Sum of Percents		Sum of Percents	

Intake ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

# **SURFACE WATER PATHWAY LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET**

LIKELIHOOD OF RELEASE- OVERLAND/FLOOD MIGRATION	Score	Data Type	Refs	
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.	*			
2. POTENTIAL TO RELEASE: Distance to surface water: _____ (feet) If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood frequency.	270			
Distance to surface water <2500 feet				500
Distance to surface water >2500 feet, and:				
Site in annual or 10-yr floodplain				500
Site in 100-yr floodplain				400
Site in 500-yr floodplain				300
Site outside 500-yr floodplain	100			
Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2				
LR =				

LIKELIHOOD OF RELEASE GROUND WATER TO SURFACE WATER MIGRATION	Score	Data Type	Refs	
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.	N/A			
NOTE: Evaluate ground water to surface water migration only for a surface water body that meets all of the following conditions:				
1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0.				
2) No aquifer discontinuity is established between the source and the above portion of the surface water body.				
3) The top of the uppermost aquifer is at or above the bottom of the surface water.				
Elevation of top of uppermost aquifer _____ Elevation of bottom of surface water body _____				
2. POTENTIAL TO RELEASE: Use the ground water potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.				
LR =				

TABLE 4-1  
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
<b>DRINKING WATER THREAT</b>		
<u>Likelihood of Release</u>		
1. Observed Release	550	_____
2. Potential to Release by Overland Flow		
2a. Containment	10	_____ from p. C-23A 1/2
2b. Runoff	25	_____ from p. C-23 E
2c. Distance to Surface Water	25	_____ from p. C-23 F
2d. Potential to Release by Overland Flow (lines 2a x (2b + 2c))	500	_____
3. Potential to Release by Flood		
3a. Containment (Flood)	10	_____ from p. C-23 F 1/2
3b. Flood Frequency	50	_____ from p. C-23 G
3c. Potential to Release by Flood (lines 3a x 3b)	500	_____
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	_____
5. Likelihood of Release (higher of lines 1 and 4)	550	_____
<u>Waste Characteristics</u>		
6. Toxicity/Persistence	a	_____
7. Hazardous Waste Quantity	a	_____
8. Waste Characteristics	100	_____
<u>Targets</u>		
9. Nearest Intake	50	_____
10. Population		
10a. Level I Concentrations	b	_____
10b. Level II Concentrations	b	_____
10c. Potential Contamination	b	_____
10d. Population (lines 10a + 10b + 10c)	b	_____
11. Resources	5	_____

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TABLE 4-2  
CONTAINMENT FACTOR VALUES  
FOR SURFACE WATER MIGRATION PATHWAY

<u>All Sources</u> (except surface impoundments, land treatment, containers, and tanks)	<u>Assigned Value</u>
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures).	10
No evidence of hazardous substance migration from source area <u>and</u> :	
(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.	10
(b) Any one of the two items in (a) present.	9
(c) Any two of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner.	7
(d) All items in (c) present.	5
(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, <u>and</u> :	
(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover.	3
(g) None of the deficiencies in (f) present.	0

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TABLE 4-3  
DRAINAGE AREA VALUES

<u>Drainage Area (acres)</u>	<u>Assigned Value</u>
Less than 50	1
50 to 250	2
Greater than 250 to 1,000	3
Greater than 1,000	4

\* drainage area is area that contributes to overland flow across a source based on observing topographic map of the area.

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TABLE 4-4  
SOIL GROUP DESIGNATIONS

<u>Surface Soil Description</u>	<u>Soil Group Designation</u>
Coarse-textured soils with high infiltration rates (for example, sands, loamy sands)	A
Medium-textured soils with moderate infiltration rates (for example, <u>sandy loams</u> , loams)	B
Moderately fine-textured soils with low infiltration rates (for example, silty loams, silts, sandy clay loams)	C
✓ Fine-textured soils with very low infiltration rates (for example, clays, sandy clays, silty clay loams, clay loams, silty clays); or impermeable surfaces (for example, pavement)	D

get info from  
Soil Survey

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TABLE 4-5  
RAINFALL/RUNOFF VALUES

2-Year, 24-Hour Rainfall (inches)	Soil Group Designation			
	A	B	C	D
Less than 1.0	0	0	2	3
1.0 to less than 1.5	0	1	2	3
1.5 to less than 2.0	0	2	3	4
2.0 to less than 2.5	1	2	3	4
2.5 to less than 3.0	2	3	4	4
3.0 to less than 3.5	2	3	4	5
3.5 or greater	3	4	5	6

Rainfall frequency atlas

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TABLE 4-6  
RUNOFF FACTOR VALUES

Drainage Area Value	Rainfall/Runoff Value						
	0	1	2	3	4	5	6
1.	0	0	0	1	1	1	1
2	0	0	1	1	2	3	4
3	0	0	1	3	7	11	15
4	0	1	2	7	17	25	25

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TABLE 4-7  
DISTANCE TO SURFACE WATER FACTOR VALUES

Distance	Assigned Value
Less than 100 feet	25
100 feet to 500 feet	20
Greater than 500 feet to 1,000 feet	16
Greater than 1,000 feet to 2,500 feet	9
Greater than 2,500 feet to 1.5 miles	6
Greater than 1.5 miles to 2 miles	3

TABLE 4-8  
CONTAINMENT (FLOOD) FACTOR VALUES

<u>Containment Criteria</u>	<u>Assigned Value</u>
Documentation that containment at the source is designed, constructed, operated, and maintained to prevent a washout of hazardous substances by the flood being evaluated	0
Other	10

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TABLE 4-9  
FLOOD FREQUENCY FACTOR VALUES

<u>Floodplain Category</u>	<u>Assigned Value</u>
Source floods annually	50
Source in 10-year floodplain	50
Source in 100-year floodplain	25
Source in 500-year floodplain	7
None of above	0

**SURFACE WATER PATHWAY  
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET  
(CONTINUED)**

DRINKING WATER THREAT TARGETS	Score	Data Type	Refs																				
<p>Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="text-align: left; padding: 5px;">Intake Name</th> <th style="text-align: left; padding: 5px;">Water Body Type</th> <th style="text-align: left; padding: 5px;">Flow</th> <th style="text-align: left; padding: 5px;">People Served</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <p>Are any intakes part of a blended system? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, attach a page to show apportionment calculations.</p> <p>3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8).</p> <p>_____</p> <p>Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____      Total = _____</p>	Intake Name	Water Body Type	Flow	People Served																			
Intake Name	Water Body Type	Flow	People Served																				
<p>4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.</p>																							
<p>5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the Intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.</p>																							
<p>6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies.</p> <ul style="list-style-type: none"> <li>• Irrigation (5 acre minimum) of commercial food crops or commercial forage crops</li> <li>• Watering of commercial livestock</li> <li>• Ingredient in commercial food preparation</li> <li>• Major or designated water recreation area, excluding drinking water use</li> </ul>																							
SUM OF TARGETS    T=																							

SI TABLE 9 (From HRS Table 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people									Pop. Value
			0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	
Minimal Stream (<10 cfs)		20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)		2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (> 100 to 1,000 cfs)		0	0	0.04	0.2	0.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)		0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (> 10,000 to 100,000 cfs)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	16	
Very Large River (>100,000 cfs)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Shallow ocean zone or Great Lake (depth < 20 feet)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Deep ocean zone or Great Lake (depth > 200 feet)		0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)		10	0	2	9	26	82	261	817	2,607	8,163	
Sum =												

Nearest Intake =

References \_\_\_\_\_

TABLE 4-14 (Concluded)

Type of Surface Water Body <sup>b</sup>	Number of People				
	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	3,000,001 to 10,000,000
Minimal stream ( $< 10$ cfs)	52,137	163,246	521,360	1,632,455	5,213,590
Small to moderate stream (10 to 100 cfs)	5,214	16,325	52,136	163,245	521,359
Moderate to large stream ( $> 100$ to 1,000 cfs)	521	1,633	5,214	16,325	52,136
Large stream to river ( $> 1,000$ to 10,000 cfs)	52	163	521	1,632	5,214
Large river ( $> 10,000$ to 100,000 cfs)	5	16	52	163	521
Very large river ( $> 100,000$ cfs)	0.5	2	5	16	52
Shallow ocean zone or Great Lake (depth $< 20$ feet)	5	16	52	163	521
Moderate ocean zone or Great Lake (depth 20 to 200 feet)	0.5	2	5	16	52
Deep zone or Great Lake (depth $> 200$ feet)	0.3	1	3	8	26
3-mile mixing zone in quiet flowing river ( $\geq 10$ cfs)	26,068	81,623	260,680	816,227	2,606,795

<sup>a</sup>Round the number of people to nearest integer. Do not round the assigned dilution-weighted population value to nearest integer.

<sup>b</sup>Treat each lake as a separate type of water body and assign it a dilution-weighted population value using the surface water body type with the same dilution weight from Table 4-13 as the lake. If drinking water is withdrawn from coastal tidal water or the ocean, assign a dilution-weighted population value to it using the surface water body type with the same dilution weight from Table 4-13 as the coastal tidal water or the ocean zone.

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## **SURFACE WATER PATHWAY**

### **Human Food Chain Actual Contamination Targets Summary Table**

On SI Table 10, list the hazardous substances detected in sediment, aqueous, sessile benthic organism tissue, or fish tissue samples (taken from fish caught within the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed releases detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

### **Sensitive Environment Actual Contamination Targets Summary Table**

On SI Table 11, list each hazardous substance detected in aqueous or sediment samples at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration.	% of Cancer Risk Concentration	RfD	% of RfD
Highest Percent					Sum of Percents		Sum of Percents	

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environment ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Environment Value \_\_\_\_\_

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Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					

Environment ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Environment Value \_\_\_\_\_

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					



# **SURFACE WATER PATHWAY (continued) HUMAN FOOD CHAIN THREAT WORKSHEET**

HUMAN FOOD CHAIN THREAT TARGETS	Score	Data Type	Refs										
<p>Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.</p>													
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Fishery Name _____ Water Body _____ Flow _____ cfs   Species _____ Production _____ lbs/yr  Species _____ Production _____ lbs/yr </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Fishery Name _____ Water Body _____ Flow _____ cfs   Species _____ Production _____ lbs/yr  Species _____ Production _____ lbs/yr </div> <div style="border: 1px solid black; padding: 5px;"> Fishery Name _____ Water Body _____ Flow _____ cfs   Species _____ Production _____ lbs/yr  Species _____ Production _____ lbs/yr </div>													
<p><b>FOOD CHAIN INDIVIDUAL</b></p> <p><b>7. ACTUAL CONTAMINATION FISHERIES:</b></p> <p>If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.</p> <p><b>8. POTENTIAL CONTAMINATION FISHERIES:</b></p> <p>If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20.</p> <p>If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width:50%;">Lowest Flow</th> <th style="width:50%;">FCI Value</th> </tr> </thead> <tbody> <tr> <td>&lt;10 cfs</td> <td align="center">20</td> </tr> <tr> <td>10 to 100 cfs</td> <td align="center">2</td> </tr> <tr> <td>&gt;100 cfs, coastal tidal waters, oceans, or Great Lakes</td> <td align="center">0</td> </tr> <tr> <td>3-mile mixing zone in quiet flowing river</td> <td align="center">10</td> </tr> </tbody> </table> <p align="right" style="margin-top: 10px;">FCI Value = _____</p>				Lowest Flow	FCI Value	<10 cfs	20	10 to 100 cfs	2	>100 cfs, coastal tidal waters, oceans, or Great Lakes	0	3-mile mixing zone in quiet flowing river	10
Lowest Flow	FCI Value												
<10 cfs	20												
10 to 100 cfs	2												
>100 cfs, coastal tidal waters, oceans, or Great Lakes	0												
3-mile mixing zone in quiet flowing river	10												
<p><b>SUM OF TARGETS T =</b></p>													

## SURFACE WATER PATHWAY (continued) ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS	Score	Data Type	Refs																																																																													
<p>Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">Environment Name</th> <th style="width: 35%;">Water Body Type</th> <th style="width: 30%;">Flow</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td style="text-align: right;">cfs</td></tr> <tr><td> </td><td> </td><td style="text-align: right;">cfs</td></tr> <tr><td> </td><td> </td><td style="text-align: right;">cfs</td></tr> <tr><td> </td><td> </td><td style="text-align: right;">cfs</td></tr> <tr><td> </td><td> </td><td style="text-align: right;">cfs</td></tr> </tbody> </table> <p>9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Environment Name</th> <th style="width: 25%;">Environment Type and Value (SI Tables 13 &amp; 14)</th> <th style="width: 25%;">Multiplier (10 for Level I, 1 for Level II)</th> <th style="width: 25%;">Product</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td style="text-align: center;">x</td><td> </td></tr> <tr><td> </td><td> </td><td style="text-align: center;">x</td><td> </td></tr> <tr><td> </td><td> </td><td style="text-align: center;">x</td><td> </td></tr> <tr><td> </td><td> </td><td style="text-align: center;">x</td><td> </td></tr> <tr> <td colspan="3" style="text-align: right;">Sum =</td> <td> </td> </tr> </tbody> </table> <p>10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Flow</th> <th style="width: 15%;">Dilution Weight (SI Table 12)</th> <th style="width: 25%;">Environment Type and Value (SI Tables 13 &amp; 14)</th> <th style="width: 10%;">Pot. Cont.</th> <th style="width: 40%;">Product</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">cfs</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">0.1 =</td> <td> </td> </tr> <tr> <td style="text-align: center;">cfs</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">0.1 =</td> <td> </td> </tr> <tr> <td style="text-align: center;">cfs</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">0.1 =</td> <td> </td> </tr> <tr> <td style="text-align: center;">cfs</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">0.1 =</td> <td> </td> </tr> <tr> <td style="text-align: center;">cfs</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">0.1 =</td> <td> </td> </tr> <tr> <td colspan="4" style="text-align: right;">Sum =</td> <td> </td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;">T =</p>	Environment Name	Water Body Type	Flow			cfs			cfs			cfs			cfs			cfs	Environment Name	Environment Type and Value (SI Tables 13 & 14)	Multiplier (10 for Level I, 1 for Level II)	Product			x				x				x				x		Sum =				Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product	cfs	x	x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		cfs	x	x	0.1 =		Sum =							
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SI TABLE 12 (HRS Table 4-13):  
SURFACE WATER DILUTION WEIGHTS

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	Flow Characteristics	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river	> 10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	<del>0.001</del> 0.0001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	<del>0.001</del> 0.0001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	<del>0.0001</del> 0.00001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

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**SI TABLE 13 (HRS TABLE 4-23):  
SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES**

<b>SENSITIVE ENVIRONMENT</b>	<b>ASSIGNED VALUE</b>
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands	See SI Table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)

**SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER  
WETLANDS FRONTAGE VALUES**

<b>Total Length of Wetlands</b>	<b>Assigned Value</b>
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

**SURFACE WATER PATHWAY (concluded)  
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY**

WASTE CHARACTERISTICS				Score
14. If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is greater.				
15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.				
	Substance Value	HWQ	Product	WC Score (from Table) (Maximum of 100)
Drinking Water Threat Toxicity/Persistence	x	-		max = 100
Food Chain Threat Toxicity/Persistence Bioaccumulation	x	-		max = 1000
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	x	-		max = 1000

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 to <1E + 09	100
1E + 09 to <1E + 10	180
1E + 10 to <1E + 11	320
1E + 11 to <1E + 12	560
1E + 12 or greater	1000

**SURFACE WATER PATHWAY THREAT SCORES**

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score  $\frac{LR \times T \times WC}{82,500}$
Drinking Water				(maximum of 100)
Human Food Chain				(maximum of 100)
Environmental				(maximum of 60)

**SURFACE WATER PATHWAY SCORE  
(Drinking Water Threat + Human Food  
Chain Threat + Environmental Threat)**

(maximum of 100)

## **SOIL EXPOSURE PATHWAY**

If there is no observed contamination (e.g., ground water plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

### **Soil Exposure Resident Population Targets Summary**

For each property (duplicate page 35 as necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

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# SOIL EXPOSURE PATHWAY WORKSHEET RESIDENT POPULATION THREAT

LIKELIHOOD OF EXPOSURE	Score	Data Type	Refs
1. OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.			
LE =			

TARGETS	Score	Data Type	Refs										
2. RESIDENT POPULATION: Determine the number of people living or attending school or day care on a property with an area of observed contamination and whose residence, school, or day care center, respectively, is on or within 200 feet of the area of observed contamination. Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Sum =	0												
3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (i.e., no Level I or Level II targets), assign 0 (HRS Section 5.1.3).	0												
4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site. <table border="1"> <thead> <tr> <th>Number of Workers</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1 to 100</td> <td>5</td> </tr> <tr> <td>101 to 1,000</td> <td>10</td> </tr> <tr> <td>&gt;1,000</td> <td>15</td> </tr> </tbody> </table>	Number of Workers	Score	0	0	1 to 100	5	101 to 1,000	10	>1,000	15	0		
Number of Workers	Score												
0	0												
1 to 100	5												
101 to 1,000	10												
>1,000	15												
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination. <table border="1"> <thead> <tr> <th>Terrestrial Sensitive Environment Type</th> <th>Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> Sum =	Terrestrial Sensitive Environment Type	Value											
Terrestrial Sensitive Environment Type	Value												
6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies. <ul style="list-style-type: none"> <li>Commercial agriculture</li> <li>Commercial silviculture</li> <li>Commercial livestock production or commercial livestock grazing</li> </ul>													
Total of Targets T=	0												



SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY  
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

## SOIL EXPOSURE PATHWAY WORKSHEET NEARBY POPULATION THREAT

LIKELIHOOD OF EXPOSURE	Score	Data Type	Ref.
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6) Value <u>10</u>			
Area of Contamination (from SI Table 18 or HRS Table 5-7) Value <u>20</u>			
Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)			

note: if there is no area of  
observed contamination,  
LE = 0.

LE = 5

TARGETS	Score	Data Type	Ref.
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.			
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (i.e., properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1.			

T =

**SI TABLE 17 (HRS TABLE 5-6):  
ATTRACTIVENESS/ACCESSIBILITY VALUES**

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements—for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

**SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES**

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

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AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES  
FOR NEARBY POPULATION THREAT

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												Pop. Value
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,001	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	
Greater than 0 to $\frac{1}{4}$	58	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	1
Greater than $\frac{1}{4}$ to $\frac{1}{2}$	135	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	2
Greater than $\frac{1}{2}$ to 1	1067	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	10
Reference(s) _____														Sum = 13

## SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

### WASTE CHARACTERISTICS

10. Assign the hazardous waste quantity score calculated for soil exposure <i>HRS Section 5-1.2.2 and HRS Table 5-2.</i>	<i>10</i>																						
11. Assign the highest toxicity value from SI Table 16 <i>3 or</i> <i>for the soil exposure pathway</i>	<i>1</i>																						
12. Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: <table border="1" style="margin: 10px auto; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th style="padding: 2px 5px;">Product</th> <th style="padding: 2px 5px;">WC Score</th> </tr> </thead> <tbody> <tr><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">0</td></tr> <tr><td style="padding: 2px 5px;">&gt;0 to &lt;10</td><td style="padding: 2px 5px;">1</td></tr> <tr><td style="padding: 2px 5px;">10 to &lt;100</td><td style="padding: 2px 5px;">2</td></tr> <tr><td style="padding: 2px 5px;">100 to &lt;1,000</td><td style="padding: 2px 5px;">3</td></tr> <tr><td style="padding: 2px 5px;">1,000 to &lt; 10,000</td><td style="padding: 2px 5px;">6</td></tr> <tr><td style="padding: 2px 5px;">10,000 to &lt;1E + 05</td><td style="padding: 2px 5px;">10</td></tr> <tr><td style="padding: 2px 5px;">1E + 05 to &lt;1E + 06</td><td style="padding: 2px 5px;">18</td></tr> <tr><td style="padding: 2px 5px;">1E + 06 to &lt;1E + 07</td><td style="padding: 2px 5px;">32</td></tr> <tr><td style="padding: 2px 5px;">1E + 07 to &lt;1E + 08</td><td style="padding: 2px 5px;">56</td></tr> <tr><td style="padding: 2px 5px;">1E + 08 or greater</td><td style="padding: 2px 5px;">100</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to < 10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 or greater	100	WC = <i>12</i>
Product	WC Score																						
0	0																						
>0 to <10	1																						
10 to <100	2																						
100 to <1,000	3																						
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1E + 07 to <1E + 08	56																						
1E + 08 or greater	100																						

### RESIDENT POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 1;  
 Targets = Sum of Questions 2, 3, 4, 5, 6)

*(0)*  
LE X T X WC  
~~82,500~~

*0*

### NEARBY POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 7;  
 Targets = Sum of Questions 8, 9)

*(2,3)*  
LE X T X WC  
~~82,500~~

*0*

### SOIL EXPOSURE PATHWAY SCORE:

Resident Population Threat + Nearby Population Threat  $\div$  ~~82,500~~ (Maximum of 100)

*0*

## **AIR PATHWAY**

### **Air Pathway Observed Substances Summary Table**

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

SI TABLE 21: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Gaseous Particulate	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

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Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

## AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21.			
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).	*		
LR =			

### TARGETS

3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air.  a) Level I: _____ people x 10 = _____ b) Level II: _____ people x 1 = _____      Total = _____																					
4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22. Sum the values and multiply the sum by 0.1.																					
5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.	7																				
6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Sensitive Environment Type</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th style="text-align: left;">Wetland Acreage</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Sensitive Environment Type	Value									Wetland Acreage	Value									
Sensitive Environment Type	Value																				
Wetland Acreage	Value																				
7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.																					
8. RESOURCES: Assign a score of 5 if one or more air resources apply within 1/2 mile of a source; assign a 0 if none applies. <ul style="list-style-type: none"> <li>• Commercial agriculture</li> <li>• Commercial silviculture</li> <li>• Major or designated recreation area</li> </ul>																					
T =																					

\* A score of 500 is assigned if sampling data do not support a release to air, and a score of 550 is assigned if sampling data or direct observation support a release to air.



SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a source	0	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	
0 to $\frac{1}{4}$ mile		*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	
$> \frac{1}{4}$ to $\frac{1}{2}$ mile		2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	
$> \frac{1}{2}$ to 1 mile	1	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	
$> 1$ to 2 miles	2254	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	8
$> 2$ to 3 miles	5001	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	12
$> 3$ to 4 miles	928	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	0.7
Nearest Individual =															Sum =

References \_\_\_\_\_

\* Score = 20 if the Nearest Individual is within  $\frac{1}{8}$  mile of a source; score = 7 if the Nearest Individual is between  $\frac{1}{8}$  and  $\frac{1}{4}$  mile of a source.

SI TABLE 23 (HRS TABLE  
6-18): AIR PATHWAY  
VALUES FOR WETLAND  
AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND  
CALCULATIONS FOR AIR PATHWAY POTENTIAL  
CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and 20) 23	Product
On a Source	0.10	x	
		x	
0 to 1/4 mile	0.025	x	
		x	
		x	
1/4 to 1/2 mile	0.0054	x	
		x	
		x	
1/2 to 1 mile	0.0016	x	
		x	
		x	
1 to 2 miles	0.0005	x	
		x	
		x	
2 to 3 miles	0.00023	x	
		x	
		x	
3 to 4 miles	0.00014	x	
		x	
		x	
> 4 miles	0	x	
Total Environments Score =			

## AIR PATHWAY (concluded)

### WASTE CHARACTERISTICS

<p>9. If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration. <i>All sources must meet the minimum size requirement of 0.5 (HRS 6.1.2.1.2)</i></p>																							
<p>10. Assign the highest air toxicity/mobility value from SI Table 21.</p>																							
<p>11. Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px 10px;">Product</th> <th style="padding: 2px 10px;">WC Score</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>&gt;0 to &lt;10</td><td>1</td></tr> <tr><td>10 to &lt;100</td><td>2</td></tr> <tr><td>100 to &lt;1,000</td><td>3</td></tr> <tr><td>1,000 to &lt;10,000</td><td>6</td></tr> <tr><td>10,000 to &lt;1E + 05</td><td>10</td></tr> <tr><td>1E + 05 to &lt;1E + 06</td><td>18</td></tr> <tr><td>1E + 06 to &lt;1E + 07</td><td>32</td></tr> <tr><td>1E + 07 to &lt;1E + 08</td><td>56</td></tr> <tr><td>1E + 08 or greater</td><td>100</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to <10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 or greater	100	<p>WC = 17</p>
Product	WC Score																						
0	0																						
>0 to <10	1																						
10 to <100	2																						
100 to <1,000	3																						
1,000 to <10,000	6																						
10,000 to <1E + 05	10																						
1E + 05 to <1E + 06	18																						
1E + 06 to <1E + 07	32																						
1E + 07 to <1E + 08	56																						
1E + 08 or greater	100																						

AIR PATHWAY SCORE:


$$\frac{\overset{0}{L.A.} \times T \times WC}{82,500}$$

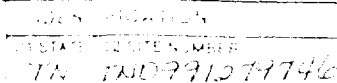
<p><i>2.06</i> (maximum of 100)</p>
-----------------------------------------

SITE SCORE CALCULATION		S	S <sup>2</sup>
GROUND WATER PATHWAY SCORE (S <sub>GW</sub> )		14.29	204.2
SURFACE WATER PATHWAY SCORE (S <sub>SW</sub> )		0.69	0.476
SOIL EXPOSURE (S <sub>S</sub> )		0.001	0.00009
AIR PATHWAY SCORE (S <sub>A</sub> )		2.06	4.24
SITE SCORE $\sqrt{\frac{S_{GW}^2 + S_{SW}^2 + S_S^2 + S_A^2}{4}} =$			7.23

#### COMMENTS

Due to low target values and a low overall site score, no further action is recommended at the site.

		<b>POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT</b>				<b>I. IDENTIFICATION</b>	
		01 STATE		02 SITE NUMBER			
		IN		105-110-1146			
<b>II. SITE NAME AND LOCATION</b>							
01 SITE NAME (Legal, common, or descriptive name of site)				02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER			
114611 114611 Ave				114611 114611 Ave			
03 CITY		04 STATE		05 ZIP CODE		06 COUNTY	
Kalamazoo		MI		49001		Kalamazoo	
09 COORDINATES		LATITUDE		LONGITUDE			
10 DIRECTIONS TO SITE (Starting from nearest public road)							
<b>III. RESPONSIBLE PARTIES</b>							
01 OWNER (if known)				02 STREET (Business, mailing, residential)			
03 CITY		04 STATE		05 ZIP CODE		06 TELEPHONE NUMBER	
07 OPERATOR (if known and different from owner)				08 STREET (Business, mailing, residential)			
09 CITY		10 STATE		11 ZIP CODE		12 TELEPHONE NUMBER	
13 TYPE OF OWNERSHIP (Check one)							
<input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL: _____ (Agency name) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: _____ (Specify) <input type="checkbox"/> G. UNKNOWN							
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)							
<input type="checkbox"/> A. RCRA 3001 DATE RECEIVED _____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 103(e)) DATE RECEIVED _____ MONTH DAY YEAR <input type="checkbox"/> C. NONE							
<b>IV. CHARACTERIZATION OF POTENTIAL HAZARD</b>							
01 ON SITE INSPECTION				BY (Check all that apply)			
<input type="checkbox"/> YES DATE _____ MONTH DAY YEAR <input type="checkbox"/> NO				<input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify)			
				CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one)				03 YEARS OF OPERATION			
<input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN				BEGINNING YEAR _____ ENDING YEAR _____ <input type="checkbox"/> UNKNOWN			
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED							
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION							
<b>V. PRIORITY ASSESSMENT</b>							
01 PRIORITY FOR INSPECTION (Check one, if high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)							
<input type="checkbox"/> A. HIGH (Inspection required promptly) <input type="checkbox"/> B. MEDIUM (Inspection required) <input type="checkbox"/> C. LOW (Inspect on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form)							
<b>VI. INFORMATION AVAILABLE FROM</b>							
01 CONTACT		02 OF (Agency/Organization)			03 TELEPHONE NUMBER		
04 PERSON RESPONSIBLE FOR ASSESSMENT		05 AGENCY		06 ORGANIZATION		07 TELEPHONE NUMBER	
Walter Peltier		EPA		EPA		1-800-711-1001	
						08 DATE	
						11-10-02	
						MONTH DAY YEAR	



☐ H. HIGHLY VOLATILE  
☐ E. EXPLOSIVE  
☐ R. REACTIVE  
☐ I. INCOMPATIBLE  
☐ M. NOT APPLICABLE



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
11 0000127746

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

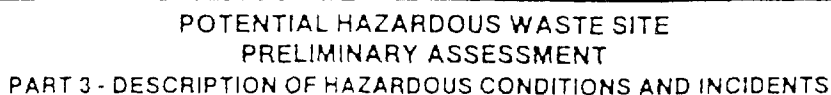
01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION



01 STATE	02 SITE NUMBER
----------	----------------

1080-791277796

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)      ☐ POTENTIAL      ☐ ALLEGED

04 NARRATIVE DESCRIPTION (include names of species)

02 ☒ OBSERVED (DATE: \_\_\_\_\_)      ☐ POTENTIAL      ☐ ALLEGED

01 ☐ L CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
(Spills/runoff/standing liquids/leaking drums)C2 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ N DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)      ☐ POTENTIAL      ☐ ALLEGED01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: ) ☐ POTENTIAL ☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION02 ☐ OBSERVED (DATE: \_\_\_\_\_)      ☐ POTENTIAL      ☐ ALLEGED

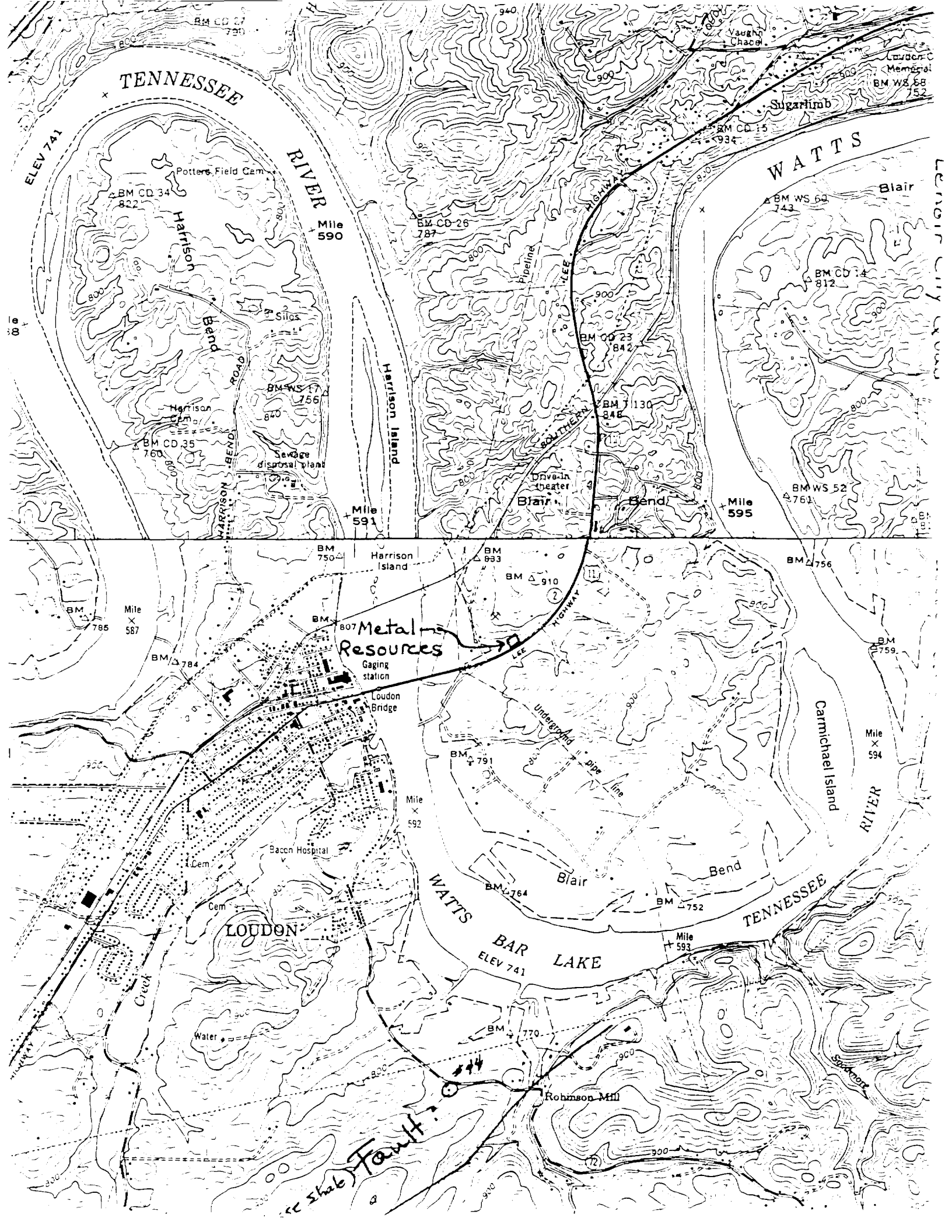
05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

#### IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state press, sample analysis, reports)





## Metal Resources

- Talked to Marty Hertz
- Knoxville DSWM at site in August '83 - No hazardous waste on-site

## - Directions

From Knoxville: I40-75 west

Take 75 south

Exit on Sugar Lem Road

Proceed East till road deadends into U.S. 11

Head towards Loudon, go ~ 1 mile to small business area

Site is a white building (old car dealerships)

Texaco across street

If you cross a bridge in the business area you've gone too far

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT

OFFICE CORRESPONDENCE

DATE: June 14, 1984 Reference 2  
TO: THE FILES  
FROM: Kenneth R. Davis  
SUBJECT: §3012 Program - Site Investigations  
Metal Resources, Incorporated

**METAL RESOURCES, INCORPORATED**

On June 8, 1984, Metal Resources, Incorporated of Loudon, Tennessee was visited by Karen Bonner and Ken Davis. Mr. Marty Hertzell, President of Metal Resources, was contacted prior to the inspection in order to obtain permission to enter the site. During the visit we met with Mrs. Pat Hertzell, Secretary, Mr. Freeman Russel, Plant Supervisor, and Mr. Luther James, Shift Supervisor.

Metal Resources refines scrap aluminum. On-site operations did not begin until 1981. Before Metal Resources' refinery was built, the land was undeveloped farm and forest land.

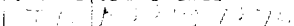
Because of the relatively recent start date of Metal Resources and the lack of a past history of development, this site does not fall under the regulation of the §3012 Program. No attempt was made to inspect the refinery or the surrounding grounds.

Based on this inspection, it is felt that NO FURTHER ACTION is required under the §3012 Program.

KRD/tad

## PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. SITE NAME AND LOCATION					II. STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER				
01 SITE NAME					02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER				
03 CITY					04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 COUNTY DISTRICT
09 COORDINATES LATITUDE LONGITUDE					10 TYPE OF OWNERSHIP (check one) <input checked="" type="checkbox"/> A PRIVATE <input type="checkbox"/> B FEDERAL <input type="checkbox"/> C STATE <input type="checkbox"/> D COUNTY <input type="checkbox"/> E MUNICIPAL <input type="checkbox"/> F OTHER <input type="checkbox"/> G UNKNOWN				
III. INSPECTION INFORMATION									
01 DATE OF INSPECTION		02 SITE STATUS <input type="checkbox"/> ACTIVE <input type="checkbox"/> INACTIVE		03 YEARS OF OPERATION BEGINNING YEAR _____ ENDING YEAR _____ UNKNOWN					
04 AGENCY PERFORMING INSPECTION (check one and specify)									
05 A EPA <input type="checkbox"/> B EPA CONTRACTOR <input type="checkbox"/> C MUNICIPAL <input type="checkbox"/> D MUNICIPAL CONTRACTOR <input type="checkbox"/> E STATE <input checked="" type="checkbox"/> F STATE CONTRACTOR <input type="checkbox"/> G OTHER _____									
06 CHIEF INSPECTOR		06 TITLE		07 ORGANIZATION		08 TELEPHONE NO.			
09 OTHER INSPECTORS		10 TITLE		11 ORGANIZATION		12 TELEPHONE NO.			
13 SITE REPRESENTATIVES INTERVIEWED		14 TITLE		15 ADDRESS		16 TELEPHONE NO.			
17 ACCESS GAINED BY (check one) <input checked="" type="checkbox"/> PERMISSION <input type="checkbox"/> WARRANT		18 TIME OF INSPECTION		19 WEATHER CONDITIONS					
IV. INFORMATION AVAILABLE FROM									
01 CONTACT		02 OF Agency Organization				03 TELEPHONE NO.			
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM		05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE				





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 12991279146

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_ Acres 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN D99127974

II. HAZARDOUS CONDITIONS AND INCIDENTS *Continued*

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION *include names of species*

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
*Spills, Punctures, Standing liquids, Leaking drums*

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ P. ILLEGAL UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

IV. COMMENTS

V. SOURCES OF INFORMATION *Cite specific references, e.g., state files, sample analysis, reports*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION  
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
711 1594127974

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED <i>Check all that apply</i>	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE <i>Specify:</i>				
<input type="checkbox"/> H. LOCAL <i>Specify:</i>				
<input type="checkbox"/> I. OTHER <i>Specify:</i>				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/ DISPOSAL <i>Check all that apply</i>	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT <i>Check all that apply</i>	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/ PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	06 AREA OF SITE
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/ RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER <i>Specify:</i>	
<input type="checkbox"/> I. OTHER <i>Specify:</i>				

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES <i>Check one:</i>
<input type="checkbox"/> A. ADEQUATE, SECURE <input type="checkbox"/> B. MODERATE <input type="checkbox"/> C. INADEQUATE, POOR <input type="checkbox"/> D. INSECURE, UNSOUND, DANGEROUS
02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: <input type="checkbox"/> YES <input type="checkbox"/> NO
02 COMMENTS

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN K991279746

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A.  $10^{-6} - 10^{-3}$  cm/sec ☐ B.  $10^{-4} - 10^{-5}$  cm/sec ☐ C.  $10^{-4} - 10^{-3}$  cm/sec ☐ D. GREATER THAN  $10^{-3}$  cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE ☐ B. RELATIVELY IMPERMEABLE ☐ C. RELATIVELY PERMEABLE ☐ D. VERY PERMEABLE  
Less than  $10^{-9}$  cm/sec.  $10^{-4} - 10^{-5}$  cm/sec.  $10^{-2} - 10^{-4}$  cm/sec. Greater than  $10^{-2}$  cm/sec.

03 DEPTH TO BEDROCK

\_\_\_\_\_ (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

\_\_\_\_\_ (ft)

05 SOIL pH

\_\_\_\_\_

06 NET PRECIPITATION

\_\_\_\_\_ (in)

07 ONE YEAR 24 HOUR RAINFALL

\_\_\_\_\_ (in)

08 SLOPE  
SITE SLOPE

\_\_\_\_\_ %

DIRECTION OF SITE SLOPE

TERRAIN AVERAGE SLOPE

\_\_\_\_\_ %

09 FLOOD POTENTIAL

SITE IS IN \_\_\_\_\_ YEAR FLOODPLAIN

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

A. \_\_\_\_\_ (mi)

B. \_\_\_\_\_ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

\_\_\_\_\_ (mi)

ENDANGERED SPECIES: \_\_\_\_\_

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS, NATIONAL STATE PARKS,  
FORESTS, OR WILDLIFE RESERVES

AGRICULTURAL LANDS  
PRIME AG LAND AG LAND

A. \_\_\_\_\_ (mi)

B. \_\_\_\_\_ (mi)

C. \_\_\_\_\_ (mi)

D. \_\_\_\_\_ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION Cite specific references, e.g., State files, sample analysis, reports



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN 004127474

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY  
(Check as applicable)

SURFACE WELL  
COMMUNITY A. ☐ B. ☐  
NON-COMMUNITY C. ☐ D. ☐

02 STATUS

ENDANGERED AFFECTED MONITORED  
A. ☐ B. ☐ C. ☐  
D. ☐ E. ☐ F. ☐

03 DISTANCE TO SITE

A. \_\_\_\_\_ (mi)  
B. \_\_\_\_\_ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING  
Other sources available:  
COMMERCIAL, INDUSTRIAL, IRRIGATION  
No other water sources available.  
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION  
Limited other sources available.  
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUNDWATER \_\_\_\_\_

03 DISTANCE TO NEAREST DRINKING WATER WELL \_\_\_\_\_ (mi)

04 DEPTH TO GROUNDWATER

\_\_\_\_\_ (ft)

05 DIRECTION OF GROUNDWATER FLOW

\_\_\_\_\_

06 DEPTH TO AQUIFER  
OF CONCERN

\_\_\_\_\_ (ft)

07 POTENTIAL YIELD  
OF AQUIFER

\_\_\_\_\_ (gpd)

08 SOLE SOURCE AQUIFER

☐ YES ☐ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

10 RECHARGE AREA

☐ YES ☐ NO  
COMMENTS

11 DISCHARGE AREA

☐ YES ☐ NO  
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION  
DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY  
IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:

AFFECTED

DISTANCE TO SITE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (mi)  
\_\_\_\_\_ (mi)  
\_\_\_\_\_ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE

TWO (2) MILES OF SITE

THREE (3) MILES OF SITE

A. \_\_\_\_\_  
NO OF PERSONS

B. \_\_\_\_\_  
NO OF PERSONS

C. \_\_\_\_\_  
NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION

\_\_\_\_\_ (mi)

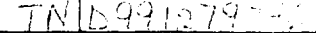
03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

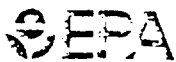
\_\_\_\_\_

04 DISTANCE TO NEAREST OFF-SITE BUILDING

\_\_\_\_\_ (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN D99127974

II. CURRENT OWNER(S)				PARENT COMPANY (if applicable)			
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
Metal Resources, Inc.							
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
Blvd. East 1st St. / P.O. Box 286							
05 CITY		06 STATE 07 ZIP CODE		12 CITY		13 STATE 14 ZIP CODE	
London		TN 37774					
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		12 CITY		13 STATE 14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		12 CITY		13 STATE 14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		12 CITY		13 STATE 14 ZIP CODE	
III. PREVIOUS OWNER(S) (List most recent first)				IV. REALTY OWNER(S) (if applicable - list most recent first)			
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		05 CITY		06 STATE 07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		05 CITY		06 STATE 07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY		06 STATE 07 ZIP CODE		05 CITY		06 STATE 07 ZIP CODE	
V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)							



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN D441279741

II. CURRENT OPERATOR *Provide different from owner*

OPERATOR'S PARENT COMPANY *(If applicable)*

01 NAME			02 D+B NUMBER			10 NAME			11 D+B NUMBER										
03 STREET ADDRESS (P.O. Box, RFD, etc.)						04 SIC CODE			12 STREET ADDRESS (P.O. Box, RFD, etc.)						13 SIC CODE				
05 CITY				06 STATE		07 ZIP CODE				14 CITY				15 STATE		16 ZIP CODE			
08 YEARS OF OPERATION						09 NAME OF OWNER													

III. PREVIOUS OPERATOR(S) *List most recent first; provide only if different from owner*

PREVIOUS OPERATORS' PARENT COMPANIES *(If applicable)*

01 NAME			02 D+B NUMBER			10 NAME			11 D+B NUMBER										
03 STREET ADDRESS (P.O. Box, RFD, etc.)						04 SIC CODE			12 STREET ADDRESS (P.O. Box, RFD, etc.)						13 SIC CODE				
05 CITY				06 STATE		07 ZIP CODE				14 CITY				15 STATE		16 ZIP CODE			
08 YEARS OF OPERATION						09 NAME OF OWNER DURING THIS PERIOD													

01 NAME			02 D+B NUMBER			10 NAME			11 D+B NUMBER										
03 STREET ADDRESS (P.O. Box, RFD, etc.)						04 SIC CODE			12 STREET ADDRESS (P.O. Box, RFD, etc.)						13 SIC CODE				
05 CITY				06 STATE		07 ZIP CODE				14 CITY				15 STATE		16 ZIP CODE			
08 YEARS OF OPERATION						09 NAME OF OWNER DURING THIS PERIOD													

01 NAME			02 D+B NUMBER			10 NAME			11 D+B NUMBER										
03 STREET ADDRESS (P.O. Box, RFD, etc.)						04 SIC CODE			12 STREET ADDRESS (P.O. Box, RFD, etc.)						13 SIC CODE				
05 CITY				06 STATE		07 ZIP CODE				14 CITY				15 STATE		16 ZIP CODE			
08 YEARS OF OPERATION						09 NAME OF OWNER DURING THIS PERIOD													

IV. SOURCES OF INFORMATION *(Cite specific references, e.g., State files, sample analysis, reports)*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 10991279740

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE 07 ZIP CODE	

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN 1294127474

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ D. SPILLED MATERIAL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ E. CONTAMINATED SOIL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ F. WASTE REPACKAGED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ G. WASTE DISPOSED ELSEWHERE  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ H. ON SITE BURIAL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ I. IN SITU CHEMICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ J. IN SITU BIOLOGICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ K. IN SITU PHYSICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ L. ENCAPSULATION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ M. EMERGENCY WASTE TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ N. CUTOFF WALLS  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ P. CUTOFF TRENCHES/SUMP  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ Q. SUBSURFACE CUTOFF WALL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN D991279746

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ S. CAPPING/COVERING  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ T. BULK TANKAGE REPAIRED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ U. GROUT CURTAIN CONSTRUCTED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ V. BOTTOM SEALED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ W. GAS CONTROL  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ X. FIRE CONTROL  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ Y. LEACHATE TREATMENT  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ Z. AREA EVACUATED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ 1. ACCESS TO SITE RESTRICTED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ 2. POPULATION RELOCATED  
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ 3. OTHER REMEDIAL ACTIVITIES  
04 DESCRIPTION

02 DATE

03 AGENCY

III. SOURCES OF INFORMATION *Cite specific references, e.g., state files, sample analysis, reports.*





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

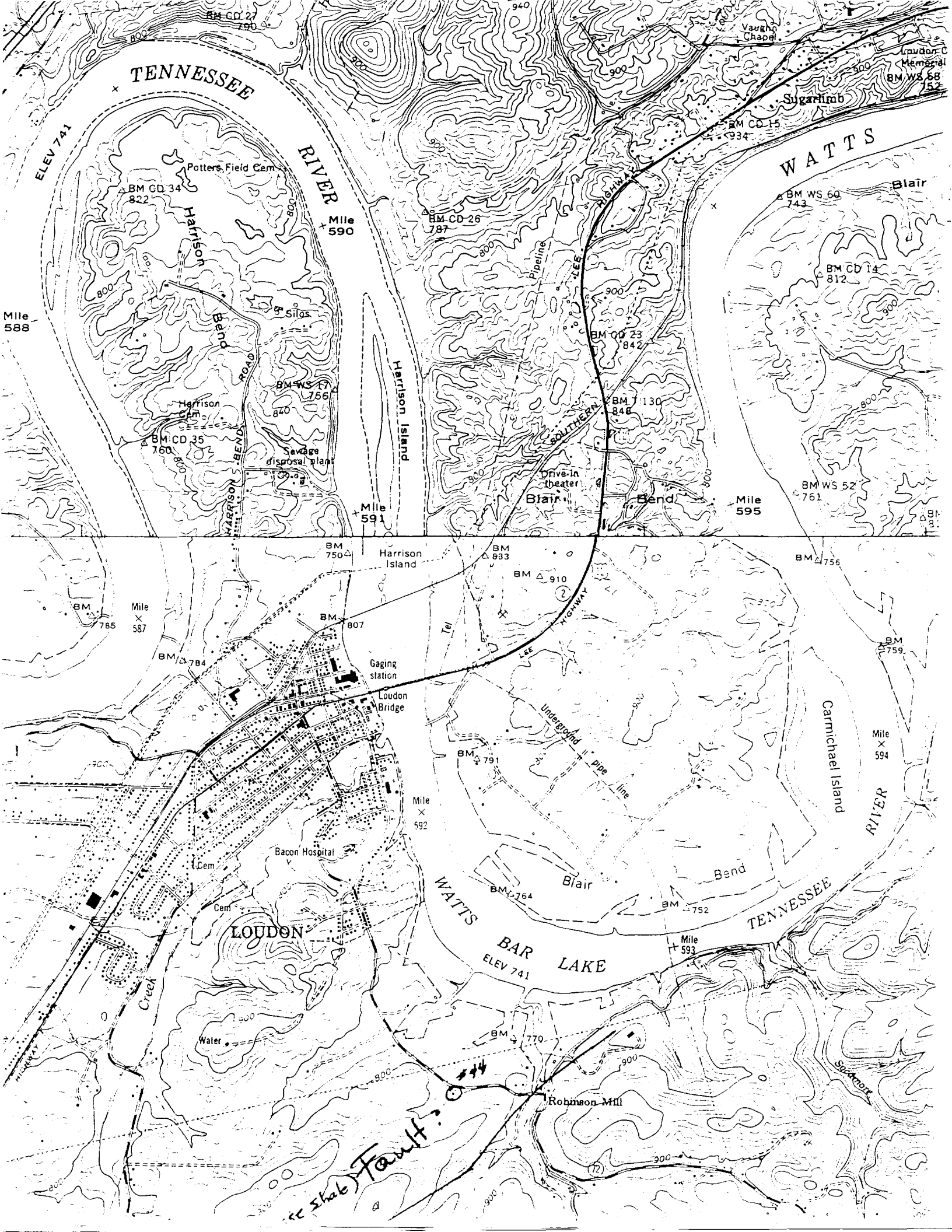
01 STATE	02 SITE NUMBER
TN	D99127974

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☐ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*



Reference 3

C-586-2-0-222

March 1, 1990

Mr. A. R. Hanke  
Site Investigation and Support Branch  
Waste Management Division  
Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365

Date: \_\_\_\_\_  
Site Disposition: \_\_\_\_\_  
EPA Project Manager: \_\_\_\_\_

Subject: Screening Site Inspection, Phase I  
Metal Resources, Inc.  
Loudon, Loudon County, Georgia  
EPA ID No. TND991279746  
TDD No. F4-9001-171

Dear Mr. Hanke:

FIT 4 conducted a Phase I Screening Site Inspection of Metal Resources, Inc. in Loudon, Loudon County, Tennessee. This inspection included a review of state and EPA file material, a target survey, and an offsite reconnaissance of the property and surrounding areas.

Metal Resources, Inc. is located on Tennessee Highway 2 North in Loudon, Tennessee (Ref. 1). The facility began operations in 1981 and refines scrap aluminum (Ref. 2). The facility filed a RCRA part A application in 1981 and withdrew it in 1982 (Ref. 2).

Metal Resources, Inc. is located in the Valley and Ridge Physiographic Province north of Loudon, Loudon County, Tennessee (Ref. 3 p. 5). In this region the topography is shaped by broad thrust-fault hills trending northeast-southwest (Ref. 1). These direct surface water into a general northeast-southwest orientation. The Tennessee River bisects this target area from east to west, but \_\_\_\_\_ northward, or southward in response to differentially eroded thrust-related ridges (Ref. 1). The

climate is mild, and it has an annual rainfall of 12 inches with a 1-year, 24-hour rainfall of 3.0 inches (Ref. 4, p. 5; 5 p. 43, 63; 6 p. 93).

In this region groundwater is obtained from a regolith and fractured bedrock aquifer system. Beneath the study area the bedrock consists of dolomite Cambrian and Ordovician forms twins (Ref. 3, pp. 36-41). These types of aquifers commonly are not productive greater than 350 feet below land surface. Production is dependent on the presence of fractures, and it is estimated that wells can achieve 100 gallons per minute (Ref. pp. 40, 41). The aquifer beneath the facility is made up of fractured and solution dissolved portions of the dolomitic Newala Formation and its overlying sedimentary regolith. The residual clay sediments of the Newala Formation represent the layer of lowest hydraulic conductivity between the cambrian aquifer and the surface. Sediments of this kind have been shown to have a hydraulic conductivity in the  $1 \times 10^{-7}$  to  $1 \times 10^{-9}$  cm/second (Ref. , p. 29). Groundwater would be expected to be present at a depth of 80 to 85 feet below land surface. (Ref. ).

Four municipal water systems (Loudon City utilities, Piney Utility District, the Dixie Lee Utility Water System and the LeNoir City Water System) are the primary suppliers of water to areas within 4 miles of the site. The Loudon City Utilities obtain its water from a surface intake on Watts Bar Lake, which is formed by the Tennessee river (Ref. 1). The intake is approximately 4,600 feet upstream from the Metal Resources facility (Ref. 1). A small spring, 3.5 miles southwest of the dump, is also used as a municipal water source; however, the Tennessee River acts as a barrier to surface, or groundwater migration (Ref. 1). The area of coverage includes the town of Loudon, an area to the west of the city south of the Tennessee River, and an area to the east of Loudon, north of the River. The system serves 2,500 connections or 9,500 persons (Refs. 1,).

The Piney Utility District obtains its water from a spring 2 miles south of the site. the spring is located on Clear Branch Road near Robinson Mill Road. Piney Utility also can purchase water from the Loudon City Utilities as a back up. the Tennessee River would act as a barrier to surface, or

groundwater migration from the facility site. this water system supplies water to 820 connections and has an area of coverage southeast of the city of Loudon (Refs.1, ).

The Dixie Lee Utility System supplies municipal water to a small area north of the city of Loudon and has three different sources of water, from a spring four miles north of the facility, a surface water intakes on Ft. Loudon Lake and from LeNoir City Utility, which also obtains water from Ft. Loudon Lake. However, none of these water sources would be influenced by conditions due to distance from the study area (Refs. 1,)

The LeNoir City Utility System supplies municipal water to the northeastern portion of the study area. The LeNoir City Utility receives water from intakes on Ft. Loudon Lake intakes are upstream and beyond the 4-mile radius of the study area (Ref).

A map showing the extent of the municipal water distribution lines within the 4-mile radius is enclosed (Ref. 1). A house count taken from the approprints topographic maps indicates that \_\_\_\_ homes or \_\_\_\_ persons are not served by the municipal systems in a 3-mile radius from the site. If a 4-mile radius is considered, there are \_\_\_\_ additional homes or \_\_\_\_ additional persons using groundwater. The closest private well to the site would be \_\_\_\_ feet to the \_\_\_\_ (Ref. 1).

The Metal Resources, Inc. facility is located on the side of a hill. Surface water would drain to the north.

Site conditions would not influence any surface water intakes used for municipal water supplies. The closest downstream surface water intakes are at Kingston and Rockwood. Both of these are more than 15 stream miles in distance form the site. The Tennessee River is used recreationally for fishing, swimming and boating (Refs.).

Land use within the 4-mile radius of the facility would include single-family residential housing, which is adjacent to the property and commercial/industrial/institutional use in the of Loudon and LeNoir City. Outside the two city limits, land is rural in nature (Ref. 1)., with the closest residence being within \_\_\_\_ feet (Ref. ). The population with 1 mile is estimated to be \_\_\_\_ persons and within 4 miles is \_\_\_\_ persons (Ref. ). the number of workers at the facility is not known.

Endangered species and sensitive habitats are listed as being in Loudon County. The slackwater darter (Etheostoma boschungii) and the snail darter (Percuna tanasi) are classified as threatened in Loudon County. In addition, the white warty-back psarly mussel (Plethobasus cicatricococ) is listed as endangered in the Tennessee River (Ref. ).

Based on the results of this evaluation and the attached reference material, FIT 4 recommends that no further remedial action be planned for the Metal Resources, Inc., facility. Please contact me at NUS Corporation if you have and questions about this site.

Very truly yours,

Approved:

Clifford Leonard, Jr.  
Project Manager

\_\_\_\_\_

CL/ma

Enclosures

CC: Kelly Cain



**BLACK & VEATCH Waste Science, Inc.**  
**Project 52012.523**

**Logbook for Documentation of Site Visit**  
**February 5 - 7, 1995**

**Metal Resources, Inc.**  
**Loudon, Loudon County, Tennessee**  
**EPA ID No. TND991279746**

**Recorded by:**

**Jon Erskine, Site Geologist**

Louden County Util Dist: (615) 986-6591

- Lenoir City Dump (527)
- Metal Resources (523)

Bradley Denton x125

200 Depo St., Lenoir City  
Directly Behind 1st National Bank

8-5 M-F

Ask for him on the radio if not there

2700 people

Anderson County Utility Board  
Eddy Trexell (615) 457-3033

101 S. Main Suite 327

Clinton, TN 37716

8-9 M-F

Lexington

Paul Threadgill

901 968-5213

MGR Elec & Water Dept

7-5

54 Monroe St

Courthouse → behind 1st Nat Bank

6750 customers / 22-29,000



Dixie Lee Utilities  
615 986-2025

Spring 600,000 gallons  
LUB 200,000  
1st UD 300,000

- Lenoir City Landfill

- METAL Resources

3,000 <sup>Meters</sup> customers

B. H. Cosick, Commissioner

Piney Util. Dist. (615) 458-4411

BE Presley 458-2725

Rita Spring 1,130 - 2870.2

~~Lenoir~~ Loudon

440

Lenoir City Water System (615) 458-2091

TENN River

201 ALMA Pl.

Jon Davis

Loudon

8-4:30

2.47, | 2,300 con → 584.2

Surface 90

Spring 10  $\frac{3}{4}$

Can be mixed

44 584.2

91

200

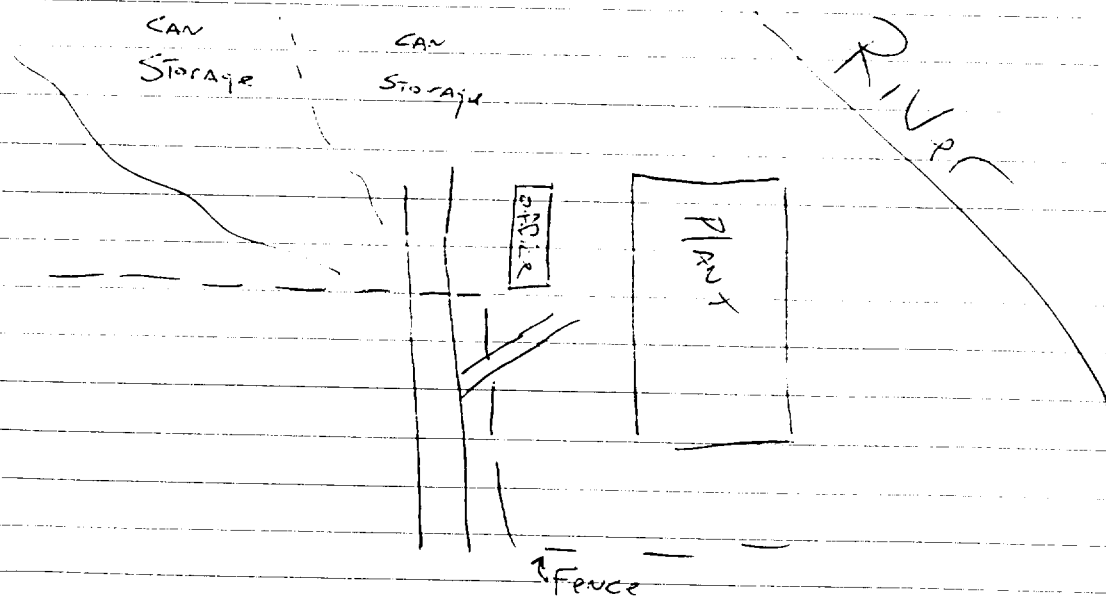
# Metal Resources

Jan E. 2/5/45

5

1400 Arrive at site. Site is no longer on Highway 11 as before. Site is now south of town at the end of Cecil B Webb drive in an industrial park by the Tennessee River. Site is active and divided into two parts, each surrounded by a barbed wire fence. One half of the site houses a processing plant and offices, while the other half is for storing aluminum scrap (recycled cans). Scrap alum. is pressed into large rectangles. It is hard to see the site from the road due to hills and vegetation. Surface water run-off appears to flow straight to river. No special drainage controls are noticeable. There are probably <sup>JAE</sup> ~~about~~ about 100 workers on site (max).

Site sketch from road



## Metal Resources

15.30 Inspecting old Metal Resources site @ Hwy 11. There are not signs of the old facility anymore. The site is currently an open grassy field. I tried to follow where overland flow would proceed from the site. No sewer channels were evident. It looks like runoff from the site would follow topographic contours west to the Tennessee River. ~~The site is~~<sup>one</sup> To the north and south of the site are hills which would confine drainage. Drainage flows to flat area on the banks of the TN River. The area is ~~now~~ located in an industrial area. It is not clear now nearby factories effect the location of the PPE.

2/7/95 Loudon County Ut./ Dist.

9

10:00

Bradley Denton, Water Department Manager, showed me water line maps for LCUD. He helped me transfer the water line info onto USGS maps. He showed me the correct surface water intake location, and delineated service areas by street. He said that LCUD provides water to 2,700 people entirely from one surface water intake. No groundwater is utilized.

Phone (615) 986-6591

## Dixie Lee Utilities 2/7/95

11:30

Bill Cosick, Dixie Lee Water Commissioner, showed me water service areas for Dixie Lee Utilities on USGS maps. He located the Dixie Lee Spring and said that Dixie Lee pumps approx 600,000 gallons a day from the spring, and purchases 200,000 gallons a day from the Loudon County Util. Dist, ~~and~~ and an additional 300,000 gallons a day from the First Util. Dist. Dixie Lee provides service to 3,000 hook-ups. The source of First Util. Dist. water is not located within the 15 mile TDL or within 4 miles of the site.

Phone: (615) 986-2025

## Loudon City Water System

13:00

201 ALMA Pl., Loudon, TN

John Davis reported that LCWS serves approx 2,300 connections. Mr. Davis delineated service areas on a USGS topo map. He identified surface LCWS' surface water intake and spring. Approx 90% of their water comes from the surface water intake, and 10% from the spring.

Phone: (615) 458-2091

Mr Davis believes that the spring draws water from the surficial Aquifer (regolith?)

# Piney Util Dist.

15

14:00

BE Presley, manager, delineated service areas on a USGS map. Mr Presley identified the spring where all of Piney's water is drawn from. Piney provides water to 1,130 connections.

Phone (615) 458-4411

Spring located  $1\frac{3}{4}$  miles south of site

**OVERSIZED**

**DOCUMENT**



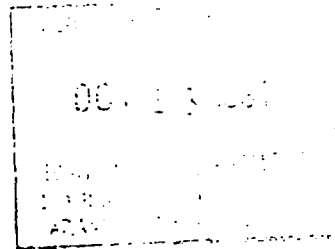
Reference 6

1990 CPH-1-44

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1990 Census of  
Population and Housing  
Summary Population and  
Housing Characteristics  
**Tennessee**

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Issued August 1991



U.S. Department of Commerce  
Robert A. Mosbacher, Secretary  
Rockwell A. Schnabel, Deputy Secretary

Economics and Statistics Administration  
Michael R. Darby, Under Secretary  
for Economic Affairs and Administrator

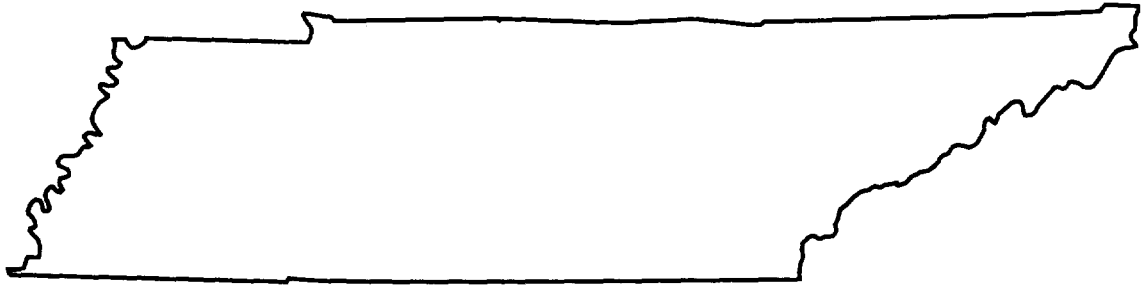
BUREAU OF THE CENSUS  
Barbara Everitt Bryant, Director

Summary of population and housing characteristics for selected counties in Tennessee																				
County	Persons in households		Family households			Nonfamily households				Persons per—		Persons in group quarters								
	Total	All households	Total	Married-couple family	Female householder, no husband present	Total	Householder living alone		Total	Household	Family	Total	Institutionalized persons	Other persons in group quarters						
							Total	65 years and over												
Tennessee	4 748 056	1 853 725	1 348 019	1 059 569	232 699	505 706	442 129	178 077	143 105	2.54	3.05	129 129	65 389	63 740						
Adams County	67 595	27 384	19 846	16 181	2 958	7 538	6 911	3 117	2 547	2.47	2.96	655	578	77						
Anderson County	30 031	11 608	8 788	7 087	1 289	2 840	2 536	1 290	1 017	2.59	3.01	380	343	37						
Andrew County	14 255	5 784	4 333	3 732	465	1 451	1 349	751	603	2.46	2.90	269	228	41						
Bedford County	8 608	3 261	2 522	2 104	300	739	670	320	240	2.54	3.06	1 061	1 051	10						
Bell County	84 463	33 624	25 344	21 284	3 237	8 280	7 400	3 267	2 661	2.51	2.94	1 506	1 044	462						
Benton County	72 043	27 604	21 157	17 518	2 841	6 447	5 714	2 277	1 826	2.61	3.02	1 669	539	1 130						
Bethesda County	34 783	13 150	10 158	8 036	1 702	2 992	2 789	1 496	1 192	2.65	3.07	296	285	11						
Birmingham County	10 356	3 980	3 035	2 574	351	945	872	470	375	2.60	3.03	111	111	—						
Bolivar County	26 860	10 727	8 013	6 612	1 092	2 714	2 531	1 435	1 148	2.50	2.95	654	388	266						
Bourbon County	50 225	20 189	14 979	12 283	2 114	5 210	4 779	2 314	1 839	2.49	2.94	1 280	749	531						
Breathitt County	26 840	9 515	7 748	6 679	776	1 767	1 524	587	436	2.82	3.15	300	180	120						
Bullitt County	11 791	4 558	3 505	2 933	446	1 053	963	514	422	2.59	3.01	1 028	187	841						
Burke County	25 533	9 629	7 579	6 266	1 007	2 050	1 910	935	772	2.65	3.05	604	210	394						
Burruss County	7 158	2 855	2 144	1 748	301	711	649	318	214	2.51	2.93	80	71	9						
Butler County	28 840	11 191	8 483	6 551	1 500	2 708	2 470	1 138	882	2.58	3.00	301	270	31						
Calhoun County	39 855	15 500	11 727	9 693	1 556	3 773	3 431	1 588	1 264	2.57	3.01	484	452	32						
Calloway County	13 103	5 183	3 856	3 141	567	1 327	1 257	766	623	2.53	3.00	275	275	—						
Campbell County	34 207	13 426	10 451	8 842	1 265	2 975	2 688	1 299	1 026	2.55	2.92	529	529	—						
Cannon County	489 689	207 530	131 395	95 592	29 555	76 135	62 830	18 268	14 969	2.36	2.97	21 095	10 317	10 778						
Carr County	10 320	4 216	3 109	2 603	391	1 107	1 032	607	461	2.45	2.91	142	142	—						
Cass County	14 237	5 696	4 316	3 574	584	1 380	1 293	692	563	2.50	2.93	123	106	17						
Catawba County	34 532	13 019	10 099	8 188	1 510	2 920	2 648	1 285	1 007	2.65	3.06	529	389	140						
Cayuga County	34 343	13 617	9 923	7 869	1 643	3 694	3 360	1 773	1 435	2.52	3.01	511	474	37						
Cherokee County	25 110	8 453	6 717	5 038	1 334	1 736	1 576	765	556	2.97	3.40	449	436	13						
Chickasaw County	14 559	5 511	4 258	3 415	665	1 253	1 165	585	439	2.64	3.07	110	110	—						
Chilton County	33 429	12 660	9 883	8 412	1 135	2 777	2 530	1 312	1 061	2.64	3.04	1 296	314	982						
Chocoma County	45 568	18 361	13 472	10 708	2 248	4 889	4 573	2 560	2 114	2.48	2.96	747	644	103						
Cherokee County	25 336	9 832	7 454	6 038	1 116	2 378	2 218	1 166	891	2.58	3.02	405	205	200						
Cherokee County	16 912	6 394	5 076	4 281	591	1 318	1 217	590	459	2.64	3.02	183	146	37						
Cherokee County	54 175	21 482	16 280	13 290	2 295	5 202	4 747	2 120	1 687	2.52	2.94	1 678	727	951						
Cherokee County	13 157	4 784	3 743	3 048	534	1 041	976	522	412	2.75	3.18	205	193	12						
Cherokee County	49 750	19 429	14 795	11 895	2 314	4 634	4 138	1 629	1 313	2.56	2.97	730	525	205						
Cherokee County	279 044	111 799	78 964	60 790	15 042	32 835	29 025	11 581	9 488	2.50	3.02	6 492	3 622	2 870						
Cherokee County	6 571	2 484	1 924	1 505	271	560	532	269	212	2.65	3.07	168	168	—						
Cherokee County	22 589	8 276	6 190	4 534	1 356	2 086	1 887	968	751	2.72	3.22	788	770	18						
Cherokee County	22 350	8 726	6 633	5 490	382	2 093	1 940	978	764	2.56	3.00	283	263	20						
Cherokee County	44 232	17 167	13 223	11 100	1 274	3 944	3 639	1 671	1 334	2.58	2.99	332	299	34						
Cherokee County	19 240	7 074	5 150	3 566	1 320	1 864	1 708	905	703	2.74	3.29	197	59	138						
Cherokee County	21 630	8 527	6 466	5 392	320	2 061	1 922	975	765	2.54	2.97	214	212	2						
Cherokee County	27 456	11 362	8 216	6 743	1 126	3 146	2 902	1 619	1 282	2.42	2.89	432	388	44						
Cherokee County	15 715	5 976	4 608	3 882	526	1 368	1 229	619	505	2.63	3.04	1 039	1 039	—						
Cherokee County	6 842	2 683	2 039	1 705	261	644	604	335	248	2.55	2.98	176	163	13						
Cherokee County	15 551	6 063	4 593	3 844	561	1 470	1 373	665	514	2.56	3.01	244	110	134						
Cherokee County	9 176	3 642	2 782	2 303	334	860	806	475	358	2.52	2.94	121	119	2						
Cherokee County	31 415	12 329	9 510	8 018	1 144	2 819	2 530	1 192	940	2.55	2.94	1 601	445	1 156						
Cherokee County	13 609	5 406	4 081	3 260	599	1 325	1 230	618	464	2.52	2.95	157	145	12						
Cherokee County	323 400	133 639	90 561	71 679	15 478	43 078	36 661	12 962	10 642	2.42	2.97	12 349	3 288	9 061						
Cherokee County	6 057	2 418	1 735	1 328	323	683	625	343	262	2.50	3.00	1 072	1 051	21						
Cherokee County	22 598	8 423	6 351	4 946	1 259	2 072	1 898	1 059	842	2.68	3.15	693	384	9						
Cherokee County	34 992	13 338	10 265	8 665	1 291	3 073	2 884	1 596	1 317	2.52	3.06	311	302	9						
Cherokee County	9 098	3 533	2 606	2 179	328	927	859	451	353	2.58	3.06	149	126	13						
Cherokee County	27 910	10 881	8 230	6 312	1 097	2 651	2 455	1 376	1 090	2.57	3.01	247	239	8						
Cherokee County	30 926	12 155	9 289	7 687	1 301	2 866	2 635	1 237	1 005	2.54	2.96	329	329	—						
Cherokee County	41 710	16 351	12 458	10 275	1 751	3 893	3 600	1 755	1 425	2.55	2.98	673	446	227						
Cherokee County	22 180	8 834	6 678	5 592	824	2 156	2 014	1 073	863	2.51	2.95	242	242	—						
Cherokee County	15 817	6 159	4 711	4 027	522	1 448	1 356	707	577	2.57	3.00	89	56	33						
Cherokee County	75 515	29 609	21 301	15 950	4 504	8 308	7 397	3 206	2 554	2.55	3.06	2 467	841	1 626						
Cherokee County	24 645	9 215	7 171	5 838	1 032	2 044	1 873	963	761	2.67	3.08	215	205	10						
Cherokee County	21 248	8 268	6 120	4 950	881	2 148	1 954	989	779	2.57	3.04	291	229	62						
Cherokee County	54 073	20 608	15 552	12 280	2 622	5 056	4 554	2 052	1 680	2.62	3.07	739	688	51						
Cherokee County	7 921	2 996	2 333	1 958	261	663	592	255	194	2.64	3.03	112	112	—						
Cherokee County	29 940	11 363	8 781	7 231	1 163	2 582	2 385	1 167	917	2.63	3.06	661	317	284						
Cherokee County	93 516	34 345	26 914	22 284	3 712	7 431	6 208	2 071	1 628	2.72	3.09	6 982	472	6 510						
Cherokee County	4 714	1 734	1 391	1 222	112	343	327	169	136	2.72	3.11	7	7	—						
Cherokee County	16 011	5 841	4 621	3 745	680	1 220	1 119	558	432	2.74	3.13	1 294	1 289	—						
Cherokee County	31 399	12 412	9 219	7 624	1 279	3 193	2 950	1 598	1 290	2.53	3.00	313	293	20						
Cherokee County	17 435	6 734	5 266	4 404	645	1 468	1 368	745	581	2.59	2.99	201	192	9						
Cherokee County	4 460	2 512	1 905	1 650	186	607	568	300	232	2.57	3.02	152	152	—						
Cherokee County	4 494	1 786	1 330	1 105	169	456	430	239	184	2.52	2.98	54	49	5						
Cherokee County	12 538	5 092	4 010	3 373	455	1 082	990	519	418	2.66	3.05	105	105	—						
Cherokee County	48 419	19 753	13 994	11 578	1 913	5 759	4 757	1 945	1 593	2.45	2.93	2 954	534	2 420						
Cherokee County	23 638	9 185	6 985	5 606	1 088	2 200	2 022	984	779	2.57	3.00	706	410	296						
Cherokee County	46 747	18 453	13 967	11 612	1 831	4 486	4 126	1 970	1 592	2.53	2.96	480	434	46						
Cherokee County	41 045	14 801	11 886	9 903	1 537	2 915	2 623	1 283	990	2.77	3.14	449	449	—						
Cherokee County	113 372	42 118	31 225	25 678	4 272	10 893	8 545	2 671	2 136	2.69	3.14	5 198	1 455	3 743						
Cherokee County	18 189	6 534	5 128	4 150	765	1 406	1 311	684	553	2.78	3.21	169	169	—						
Cherokee County	8 778	3 287	2 555	2 087	353	732	656	322	252	2.67	3.06	85	85	—						
Cherokee County	50 394	19 520	15 091	12 706	1 853	4 429	3 858	1 561	1 239	2.58	2.96	649	582	67						
Cherokee County	803 085	303 571	212 076	144 773	56 404	91 495														



# Water Resources Data Tennessee Water Year 1993

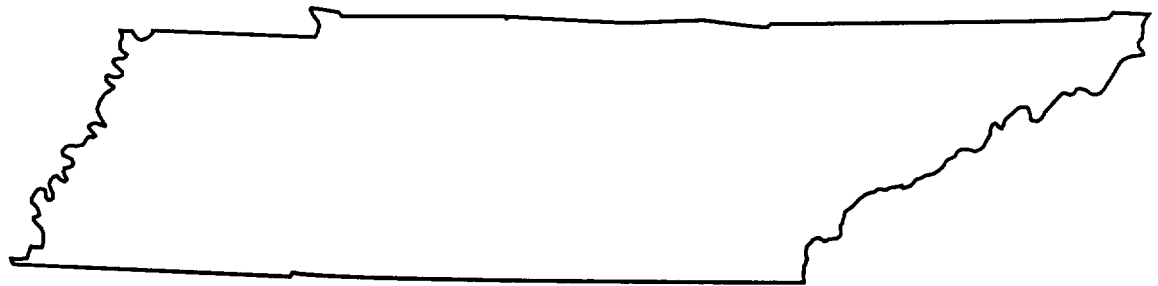
by D.F. Flohr, F.D. Edwards, J.G. Lewis, and R.A. Orr



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TN-93-1  
Prepared in cooperation with the State of Tennessee  
and with other agencies



# Water Resources Data Tennessee Water Year 1993



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TN-93-1  
Prepared in cooperation with the State of Tennessee  
and with other agencies

## RESERVOIRS IN TENNESSEE RIVER BASIN--Continued

03535900 MELTON HILL LAKE.--Lat 35°53'04", long 84°18'01", Loudon-Roane County line, Hydrologic Unit 06010207, 9 mi southwest of Oak Ridge, 19 mi west of Knoxville, 57 mi downstream from Norris Dam on Clinch River, and at mile 23.1 DRAINAGE AREA, 3,343 mi<sup>2</sup>. PERIOD OF RECORD, August 1962 to current year. GAGE, water-stage recorder. Datum of gage is sea level.

REMARKS.--Reservoir is formed by concrete gravity dam. Spillway is equipped with three radial gates, each 42 ft high by 40 ft wide. Dam completed and storage began May 1, 1963; water in reservoir first reached minimum pool elevation May 23, 1963. Revised capacity table put into use Jan. 1, 1971. Total capacity at elevation 796 ft, top of gates, is 63,500 cfs-days, of which 16,100 cfs-days is controlled storage above elevation 790.0 ft, normal minimum pool. Reservoir is used for navigation, power, and recreation.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 64,900 cfs-days, Mar. 16, 1973, elevation, 796.45 ft; minimum after first filling, 35,100 cfs-days, Feb. 9, 1966, elevation, 784.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 61,100 cfs-days, Mar. 29, elevation, 795.20 ft; minimum, 47,200 cfs-days, Feb. 4, elevation, 789.89 ft.

03543000 WATTS BAR LAKE.--Lat 35°37'13", long 84°47'00", Rhea County, Hydrologic Unit 06010201, at Watts Bar Dam on Tennessee River, 6.5 mi southeast of Spring City, 72.4 mi downstream from Fort Loudoun Dam, and at mile 529.9. DRAINAGE AREA, 17,310 mi<sup>2</sup>, approximately. PERIOD OF RECORD, October 1941 to current year. GAGE, water-stage recorder. Datum of gage is sea level.

REMARKS.--Reservoir is formed by concrete dam with riprapped earth embankments. Spillway equipped with 20 radial gates, each 32 ft high by 40 ft wide, also one 2-section leaf trashway gate 16.3 ft high by 24 ft wide. Storage begun with partial closure Dec. 12, 1941, and final closure Jan. 1, 1942; water in reservoir first reached minimum navigation pool elevation Feb. 17, 1942. Revised capacity table put into use Jan. 1, 1971. Total level pool capacity at elevation 745.0 ft, top of gates, is 592,400 cfs-days, of which 191,000 cfs-days is controlled flood storage above elevation 745.0 ft, minimum navigation pool. Reservoir is used for navigation, flood control, and power.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 745.40 ft, Mar. 17, 1973; minimum after first filling, 733.4 ft, Mar. 20, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum midnight contents, 518,500 cfs-days, Nov. 5; maximum elevation, 741.47 ft, Nov. 5; minimum midnight contents, 411,300 cfs-days, Feb. 11; minimum elevation, 735.26 ft, Feb. 11. Contents based on backwater profile.

03564000 LAKE OCOEE.--Lat 35°05'40", long 84°38'53", Polk County, Hydrologic Unit 06020003, at Lake Ocoee Dam on Ocoee River at Parksville, 13.8 mi east of Cleveland, and at mile 11.9. DRAINAGE AREA, 595 mi<sup>2</sup>. PERIOD OF RECORD, June 1914 to current year. Prior to October 1953, published as "Parksville (Ocoee No. 1) Reservoir," and October 1953 to September 1968, as "Parksville Lake." GAGE, nonrecording gage. Datum of gage is 6.89 ft above sea level. Gage readings have been reduced to sea level.

REMARKS.--Reservoir is formed by concrete dam with 347 ft of spillway. Spillway is equipped with four floodgates each 6 ft high by 20 ft wide and 265 ft of flashboards about 5.7 ft high. Crest of spillway under gates is at elevation 830.82 ft; remainder of spillway is 1.0 ft higher. Dam completed and storage began in 1911. Capacity of reservoir has been considerably reduced by silting. Revised capacity table put into use Jan. 1, 1979. Total capacity at elevation 837.55 ft, about top of flashboards, is 42,300 cfs-days, of which 15,600 cfs-days is controlled storage above elevation 817.9 ft, normal minimum pool. Reservoir is used for power.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum midnight contents observed, 53,300 cfs-days, July 9, 1916; maximum midnight elevation observed, 840.2 ft, Feb. 10, 1946; minimum contents observed, 27,300 cfs-days, Jan. 27, 1956, elevation, 817.7 ft; minimum midnight elevation observed, 814.8 ft, Dec. 14, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 41,000 cfs-days, May 6, elevation, 836.6 ft; minimum, 32,300 cfs-days, Jan. 18, elevation, 826.7 ft.

## MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)
03535900 MELTON HILL LAKE				*03543000 WATTS BAR LAKE			03564000 LAKE OCOEE		
Sept. 30...	794.10	57,900	-	740.45	498,400	-	834.3	38,700	-
Oct. 31...	793.59	56,500	-1,400	739.99	490,800	-7,600	834.7	39,100	+400
Nov. 30...	793.51	56,300	-200	736.83	434,100	-56,700	831.2	35,900	-3,200
Dec. 31...	793.50	56,200	-100	737.41	446,800	+12,700	832.2	36,800	+900
CAL YR 1992	-	-	-400	-	-	+32,500	-	-	+4,200
Jan. 31...	793.87	57,300	+1,100	736.87	434,800	-12,000	827.3	32,700	-4,100
Feb. 28...	793.95	57,500	+200	736.98	435,000	+200	828.4	33,600	+900
Mar. 31...	793.75	56,900	-600	736.61	431,600	-3,400	832.5	37,100	+3,500
Apr. 30...	794.14	58,000	+1,100	740.69	503,100	+71,500	835.9	40,300	+3,200
May 31...	794.42	58,800	+800	740.81	505,500	+2,400	834.5	38,900	-1,400
June 30...	793.84	57,200	-1,600	740.61	501,600	-3,900	835.1	39,500	+600
July 31...	793.52	56,300	-900	740.27	495,000	-6,600	834.8	39,200	-300
Aug. 31...	793.63	56,600	+300	740.22	494,000	-1,000	835.3	39,700	+500
Sept. 30...	793.73	57,200	+600	740.04	490,700	-3,300	834.7	39,100	-600
WTR YR 1993	-	-	-700	-	-	-7,700	-	-	+400

\* Contents based on backwater profile.

# FISHERIES REPORT

94-14

Reference 8

## COMMERCIAL FISHING REPORT 1993



By  
Robert M. Todd

Tennessee Wildlife



Resources Agency

TABLE 19

ESTIMATED 1993 HARVEST OF ALL FISH SPECIES COMBINED BY QUARTER  
REPORTED IN POUNDS

BODY OF WATER	JANUARY - MARCH	APRIL - JUNE	JULY - SEPTEMBER	OCTOBER - DECEMBER	ANNUAL HARVEST
BARKLEY	3,949	160,098	272,490	201,663	638,200
CHEATHAM	0	30,234	1,062	3,649	34,945
CHEROKEE	1,364	2,856	23,566	0	27,786
CHICKAMAUGA	0	202,652	120,897	79,265	402,814
DAVY CROCKET	0	0	0	0	0
DOUGLAS	219,434	154,647	89,581	147,876	611,538
FORT LOUDOUN	0	18,118	15,392	27,077	60,587
GUNTERSVILLE	21,703	0	0	3,857	25,560
JOHN SEVIER	0	0	0	0	0
KENTUCKY	213,059	474,114	501,861	766,916	1,955,950
NICKAJACK	20,883	63,789	0	65,571	150,243
OLD HICKORY	2,234	48,778	32,002	38,298	121,312
PICKWICK	13,789	63,003	85,249	54,087	216,128
REELFOOT	6,523	366	22,063	2,298	31,250
WATTS BAR	0	20,828	34,677	0	55,505
CHISHOLM	358	2,471	531	2,005	5,365
CRUTCHER	0	0	0	0	0
BRUTENS BR.	0	0	0	0	0
NORTH LAKE	0	0	0	0	0
OPEN LAKE	616	0	0	0	616
BEECH RIVER	0	0	0	0	0
CLINCH RIVER	0	0	26,184	0	26,184
CUMBERLAND	18,767	10,669	22,389	45,649	97,474
DUCK RIVER	0	1,500	1,657	0	3,157
EMORY RIVER	0	0	0	0	0
FORKED DEER	1,638	0	0	0	1,638
FRENCH BROAD	0	0	0	0	0
HARPETH	0	0	0	0	0
HATCHIE	11,859	11,786	946	12,508	37,099
HIWASSEE	0	0	67	0	67
HOLSTON	0	0	0	0	0
LOOSAHATCHIE	998	0	0	0	998
MISSISSIPPI	29,797	20,816	105,075	37,832	193,520
NOLICHUCKY	0	2,013	2,478	0	4,491
OBION RIVER	7,730	3,642	2,646	4,006	18,024
OLD RIVER	0	183	0	0	183
RED RIVER	0	212	0	0	212
SEQUATCHIE	0	0	0	0	0
WOLF RIVER	0	0	0	0	0
COLD CREEK	709	1,281	0	0	1,990
DEER CREEK	0	0	0	0	0
MORGAN CREEK	0	0	0	0	0
NIXON CREEK	0	0	0	0	0
POND CREEK	0	0	0	0	0
WEST FORK CK	0	0	0	0	0
ALL WATERS	575,410	1,294,056	1,360,813	1,492,557	4,722,836

**OVERSIZED**

**DOCUMENT**





**REPORT OF SURVEY FOR:  
THREATENED AND ENDANGERED SPECIES  
WETLANDS  
STREAM IDENTIFICATION  
AT A PROPOSED SOLID WASTE LANDFILL SITE  
BLAIR BEND INDUSTRIAL PARK,  
LOUDON COUNTY, TENNESSEE**

**Prepared for:  
Metal Resources, Inc.  
Blair Bend Industrial Park  
Loudon, Tennessee 37777**

**Prepared by:  
ERCE  
725 Pellissippi Parkway  
P.O. Box 22879  
Knoxville, Tennessee 37933-0879**

**ERCE # 03540903**

**December 1991**

## INTRODUCTION

Metal Resources, Inc. is seeking a permit for the construction of a solid waste landfill on a tract of property located in the Blair Bend Industrial Park, Loudon, Loudon County, Tennessee. This report addresses three specific regulatory compliance issues associated with regulations promulgated by the Tennessee Department of Environment and Conservation (TDEC), Division of Solid Waste Management. These three issues and applicable regulations are discussed in the following paragraphs.

### Endangered Species

Rule 1200-1-7-.04(2)(m) requires that:

Facilities shall be located, designed, constructed, operated, maintained, closed, and cared for during the post-closure care period in a manner that does not:

1. Cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife; or
2. Result in the destruction or adverse modification of the critical habitat of endangered or threatened species.

Rule 1200-1-7-.01(2) defines an endangered or threatened species as "any species listed in 50 *Code of Federal Regulations* (CFR) Part 17, as such list exists on the effective date of this Rule".

### Wetlands

Rule 1200-1-7.04(2)(p) states: "Facilities must not be located in a wetland".

### Streams

Rule 1200-1-8.04(3)(a), Buffer Zone Standards for Siting New Landfills, states:

[fill areas are at a minimum]...:

1. 200 feet from the normal boundaries of springs, streams, lakes, and other bodies of water (except that this standard shall not apply to any wet weather conveyance nor to bodies of water constructed and designed to be a part of the facility).

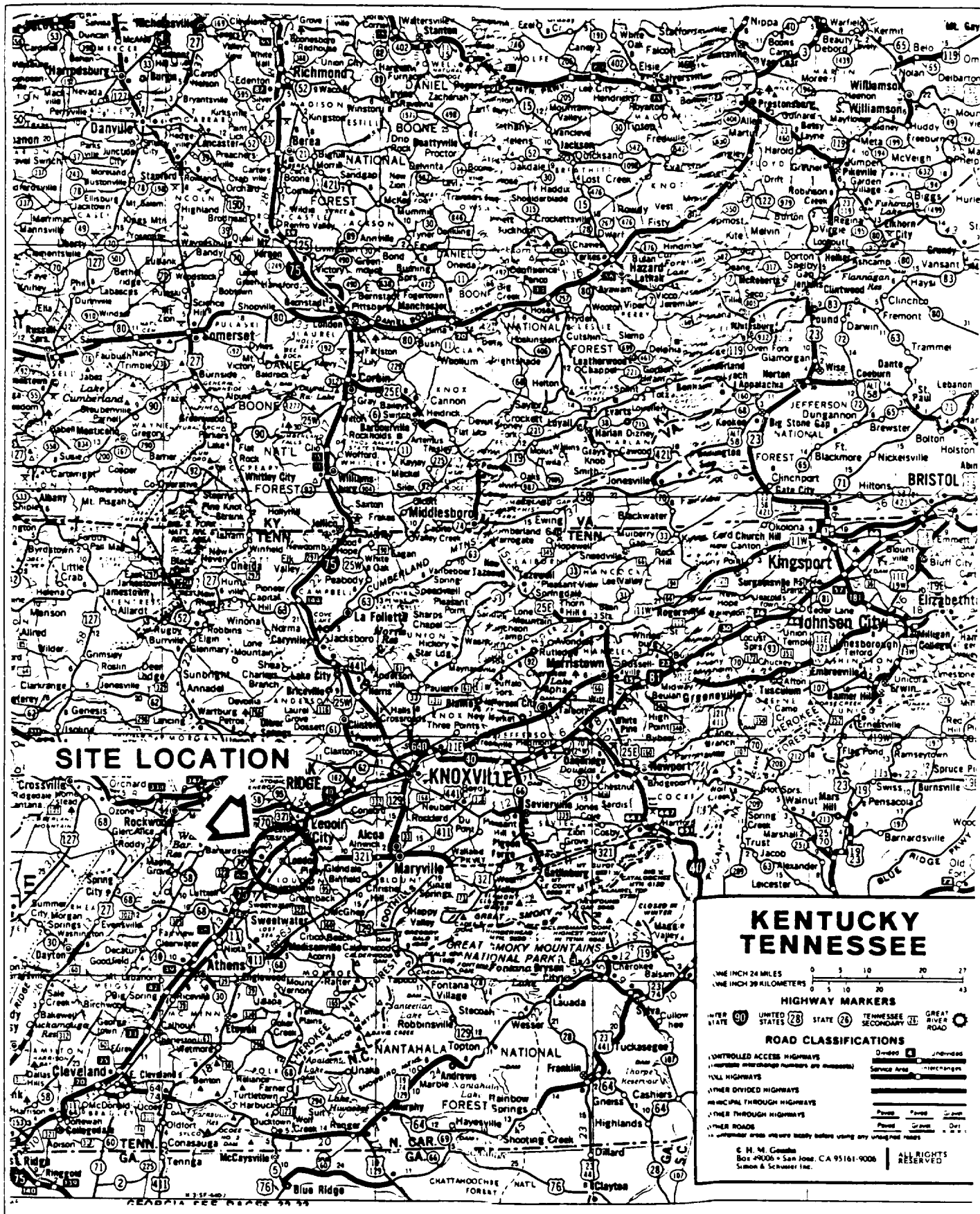
### **DESCRIPTION OF THE SURVEY AREA**

The subject tract is located near Loudon, in the central portion of Loudon County, Tennessee. Figure 1-1 is a depiction of the regional location, and Figure 1-2 depicts the site location within Loudon County.

As shown in Figure 1-3, topography on the subject tract ranges from approximately 750 feet above sea level to 900 feet above sea level; vegetation complexes present include oak-hickory forest, open fields from agricultural abandonment, second-growth cedar/hardwood forests, and vegetation associated with an abandoned home site.

### ENDANGERED SPECIES KNOWN FROM THE AREA

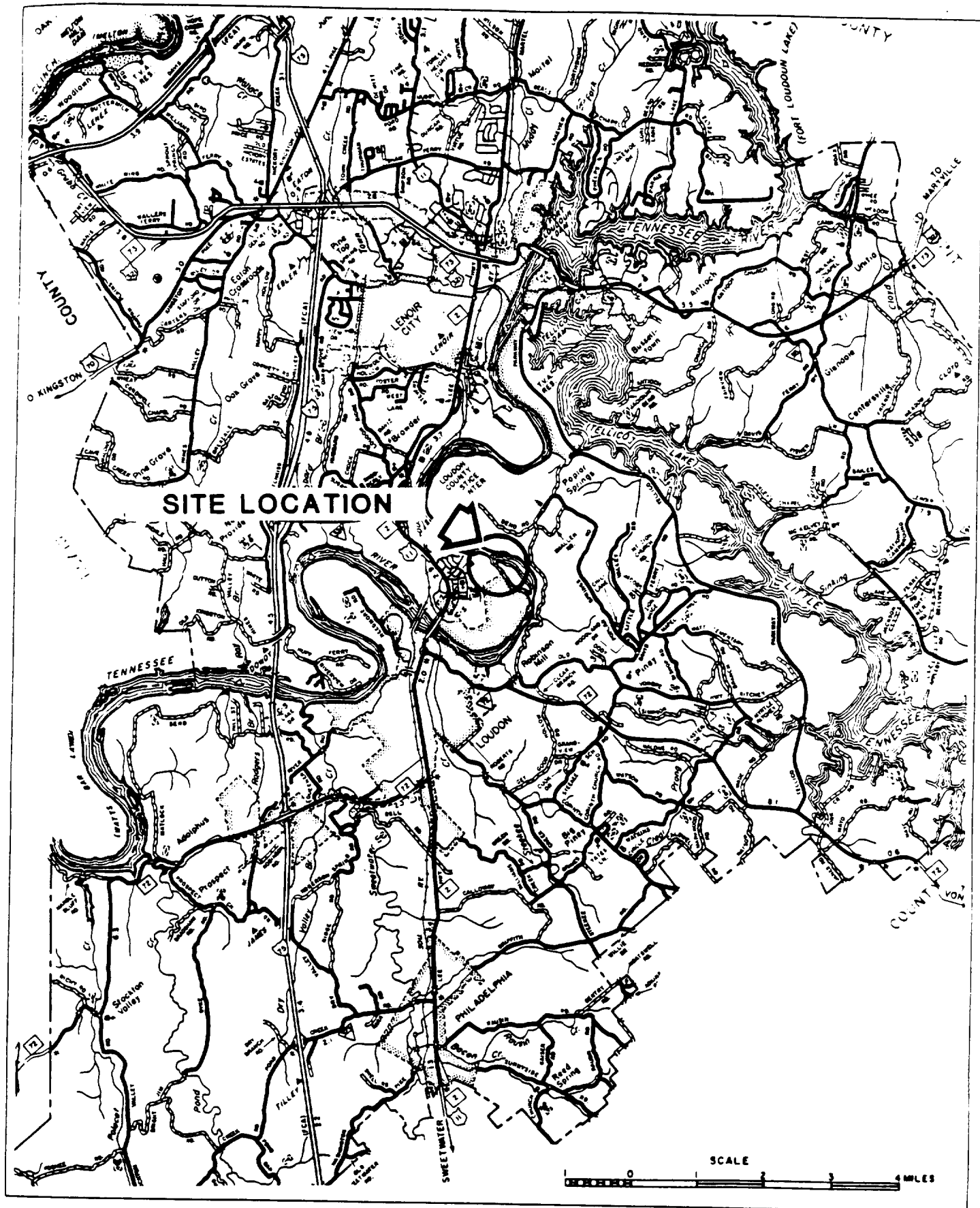
The Tennessee Wildlife Resources Agency (TWRA) is the regulating agency for endangered and threatened species of wildlife in Tennessee, with the division of Ecological Services of the



LOCATION OF LOUDON, TENNESSEE  
METAL RESOURCES INC  
PROJECT #13540903  
4 5/91  
SCALE: 1" = 24 MILES

Figure 1-1





SITE LOCATION  
 METAL RESOURCES INC  
 LOUDON, TENNESSEE  
 PROJECT #13540903  
 4/5/91

Figure 1-2

Tennessee Department of Conservation being the corresponding agency for plant species. Both of the agencies maintain lists of species listed as endangered or threatened by the Federal government. Consultations with these two agencies indicated that occurrences of listed species are tracked by county and, within counties, by the United States Geological Survey (USGS) 7.5' quadrangle maps.

The proposed location of the landfill is on the Loudon, TN, quadrangle. Accordingly, the Federal list of endangered and threatened species known to occur on that quadrangle were obtained. The list is given in Table 1. Of the two species listed, one is a mussel and the other is a fish species; both are known from the Tennessee River, which is located adjacent to the subject property.

#### Wetlands

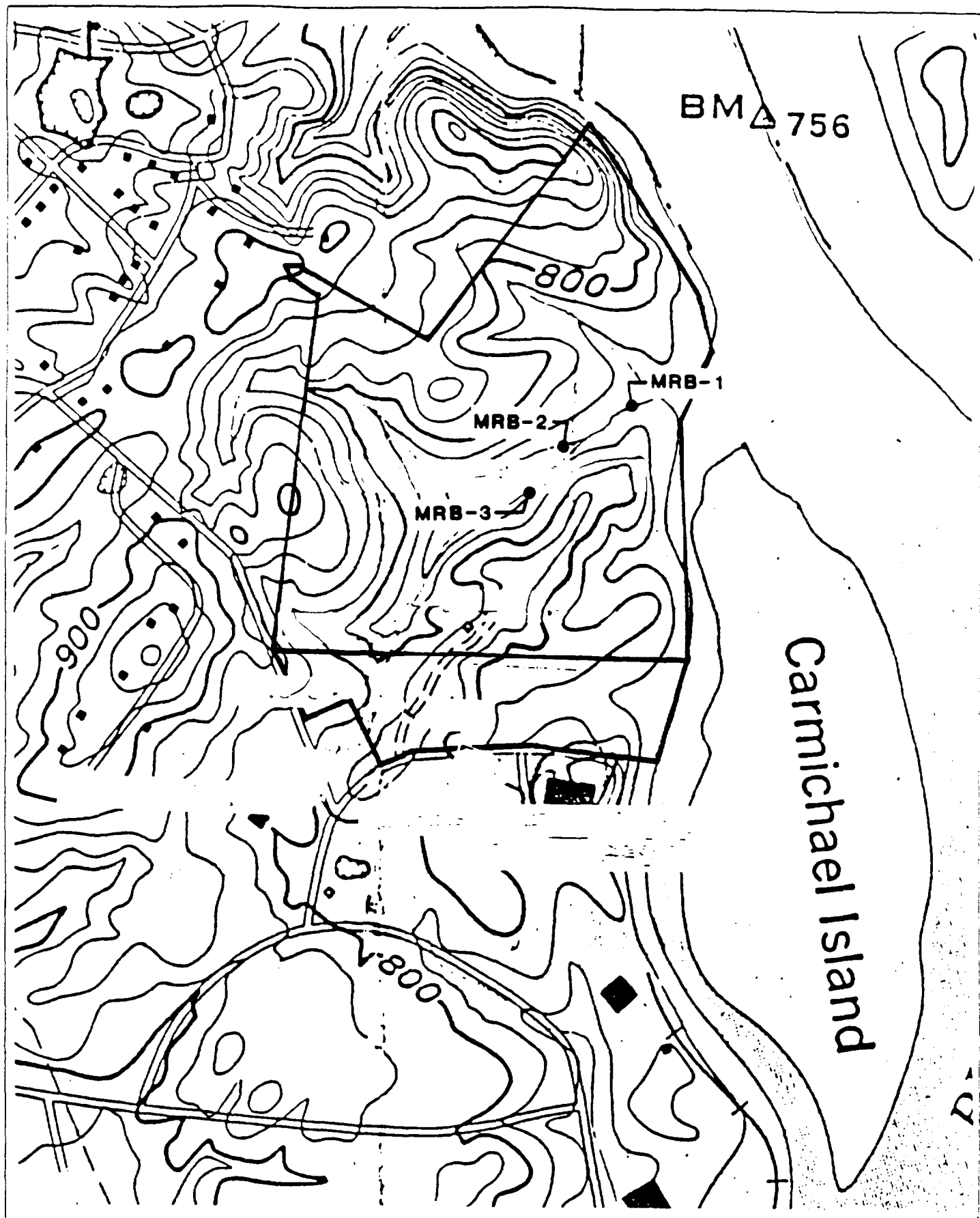
Copies of the National Wetlands Inventory Map for the Loudon, TN, quadrangle were obtained from the United States Department of Agriculture, Soil Conservation Service (SCS). The map showed no previously identified wetlands present on the subject property.

#### Streams

The USGS quadrangle for Loudon, TN, shows three "blue-line" streams present on the subject property (see Figure 1-3). As shown on that map, these streams drain the three major hollows present, merge, and exit the property at the eastern boundary, flowing directly into the Tennessee River.

**Table 1. Federally Listed Endangered And Threatened Species Known To Occur On The Loudon, TN, Quadrangle.**

Scientific Name	Common Name	Federal Status	State Status
<u>Percina tanasi</u>	Snail Darter	LT	T
<u>Lampsilis abrupta</u>	Pink Mucket Mussel	LE	E



**APPROXIMATE SAMPLING LOCATIONS**



METAL RESOURCES INC  
LOUDON, TENNESSEE  
PROJECT #13540903  
4/5/91  
NOT TO SCALE

Figure 1-3





## SURVEY RESULTS AND DISCUSSION

ERCE personnel visited the subject site on 7 July 1991. Although the only endangered and threatened species known to occur on the quadrangle were aquatic species, a systematic survey of the site was made to search for previously unknown occurrences of terrestrial species. In addition, earlier surveys of the tract conducted in April and May of 1991 were made to determine the presence of potential jurisdictional wetlands and "blue-line" streams. The results of these surveys were as follows:

No threatened or endangered species were observed. Of the two state listed plant species known from the Loudon quadrangle, Aster ericoides (White Heath Aster) and Isoetes macrospora (Lake Quillwort) neither individuals nor appropriate habitat was observed.

No potential jurisdictional wetlands were discovered. While portions of the proposed landfill site are situated in drainageways, no obligate hydrophytic plants were observed and few facultative hydrophytes were seen. Only one small body of standing water is present on the site. This approximately 20 feet by 20 feet area appears to be the result of previous construction activities on the southeastern boundary of the site. Appendix I contains the U.S. Army Corps of Engineers determination that no wetland hydrologic characteristics were observed on site.

Only one small reach of stream within the subject property was determined to be perennial in nature. This reach occurs below the confluence of the two major drainageways on the site. An investigation of the macroinvertebrate communities of the drainageways was conducted to assist in this conclusion. The results of this investigation are included as Appendix II. Figure 1-3 shows the locations of the benthic sampling sites. The reach of stream determined to be perennial lies approximately 1,200 feet from the closest proposed construction activities associated with the landfill. Personnel from the Tennessee Department of

Environment and Conservation (TDEC), Division of Solid Waste Management, visited the proposed site and determined that no jurisdictional waters of the state, other than the reach described above, were present.

As a result of all the surveys conducted, the development of the proposed landfill should not be affected by any of the regulatory constraints previously described.

May 24, 1991

Eastern Regulatory Field Office

SUBJECT: Wetlands Jurisdictional Determination at Tennessee  
River Mile 594.3R, Loudon County, Tennessee

Mr. Mike Morton  
Metal Resources, Inc.  
Post Office Box 386  
Loudon, Tennessee 37774

Dear Mr. Morton:

This refers to the recent request made on your behalf by Mr. Carlos Naranjo, of ERCE, for a jurisdictional determination of wetlands on your commercial property at Blair Bend Industrial Park, Loudon County, Tennessee. A May 22, 1991, onsite inspection revealed that the flagged area to the left of the current Metal Resources building, approximately one acre in size, is an upland area which does not contain wetland hydrologic characteristics. Therefore, a Department of the Army Permit will not be required for any proposed fill placement on the tract. This determination is valid for a period of two years from the date of this letter.

If you have further questions or comments, please contact this office at the above address or telephone (615) 986-7296.

Sincerely,

Catherine B. Elliott  
Manager, Eastern Field Office  
Operations and Readiness Division

Enclosure

Copy Furnished:

✓ Mr. Carlos Maranjo  
ERCE  
725 Pellissippi Parkway  
P.O. Box 22879  
Knoxville, Tennessee 37933

**APPENDIX II**  
**STREAM CHARACTERIZATION**

## STREAM CHARACTERIZATION

A characterization of potential blue-line streams present on the subject property was conducted in April, May, and July 1991. The scope of work for this characterization included:

- o A visual examination of streams which are shown on the Loudon quadrangle as "blue-line streams" to determine the presence/absence of surface flow;
- o Sampling of the streams and stream sediments for the possible presence of benthic macroinvertebrates;
- o The identification of any benthic macroinvertebrates present in the samples;

Results of the benthic characterization of Samples MRB-1, MRB-2, and MRB-3 are given in Table I of this Appendix. In total, the three samples contained 14 species represented by 95 individuals. The three stations are discussed below.

Station MRB-1, located below the confluence of the two major drainageways approximately 100 yards upstream from it's entrance into the Tennessee River, contained the most species, 10, represented by 30 individuals. All species found in this sample are stream species and require well oxygenated flowing water to survive.

Station MRB-2 was located in the drainageway which enters from the northwestern portion of the subject site, approximately 100 feet upstream of the confluence of the two major drainageways. The location was within 10 yards of the point at which surface water was first present in this drainageway. The sample contained two species represented by seven individuals. Gammarus sp. is a species found in seep springs or small streams which remain cool

year round; the second species present (Ironoquia sp.) is found in small streams.

The third station, MRB-3, was located in the drainageway which drains from the southern most major hollow on the subject site. At the time of the sampling event, this drainageway displayed intermittent surface flow. The fauna found at this station consisted of four species represented by 58 individuals. Of the 58 individuals, however, 55 were of a single species. These species are considered semiaquatic and prefer damp or wet habitats rich in organic debris; the permanent presence of water is not a requirement for survival of these species.

#### CONCLUSIONS

Consistent with the scope of work for the stream classification previously discussed, ERCE formulates the following conclusions based on the field work and analyses presented.

Identification of benthic invertebrate species present in samples taken from streams on the subject site indicate:

- o The stream reach downstream of the confluence of the two major drainageways should be considered a perennial stream. This reach is approximately 100 yards in length before it's entrance into the Tennessee River.
- o The drainageway which enters from the northwestern hollow on the subject site should be considered an intermittent stream from the point at which it appears on the surface. This point is approximately 100 feet upstream of the confluence of the two major drainageways on the site.

- o The drainageway which proceeds northeastward from the vicinity of Webb Road should be considered an ephemeral stream.
- o The small drain which slopes from the northeastern most hollow and empties below sample station # MRB-1 had no defined drainageway or streambed. No water was observed in this hollow during the course of all of the site visits. Therefore, no aquatic samples could be collected.

Table 1. Macroinvertebrates taken from standing water on the Blair Bend Industrial Park, Loudon County, Tennessee on April 3, 1991.

SPECIES	STATION		
	MRB-1	MBR-2	MBR-3
ANNELIDA			
Oligochaeta			
Lumbricidae			1
ARTHROPODA			
Crustacea			
Gammaridae			
Gammarus sp.		2	
Insecta			
Ephemeroptera			
Baetidae			
Baetis sp.	1		
Plecoptera			
Amphinemura sp.	2		
Trichoptera			
Limnephilidae			
Ironoquia sp.	1	5	
Diptera			
Chironomidae			
Cardiocladius obscurus	1		
Chaetocladius			
piger sp. gp.			55
Cricotopus			
tremulus sp. gp.	4		1
Orthocladius sp.	2		
Parametriocnemus			
lundbecki	2		
Thienemanniella xena	1		
Tvetenia			
discoloripes sp. gp.	14		
Tipulidae			
Ormosia sp.	2		
Pseudolimnophila sp.			1
TOTAL NO. OF ORGANISMS	30	7	58
TOTAL NO. OF SPECIES	10	2	4



i

## METAL RESOURCES

LATITUDE 35:44:39 LONGITUDE 84:18:40 1983 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	0	0	2269	0	2269
S 2	0	0	0	0	0	928	928
S 3	0	0	0	0	0	0	0
S 4	0	0	0	0	1026	0	1026
S 5	0	0	14	0	0	0	14
S 6	0	0	0	1303	1645	0	2948
S 7	0	0	0	951	0	0	951
S 8	0	0	0	0	61	0	61
RING	0	0	14	2254	5001	928	8197
TOTALS							

press RETURN to continue

MENU: Geodata Handling Data List procedures

~~\*\*\*\*\*~~
 Note: ~~\*\*\*\*\*~~
 (in parentheses)

(\*\*\*\*\*)

or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR

GEMS&gt; exit

Type YES to confirm the EXIT command; type NO to restart GEMS

GEMS&gt; yes

\$ logout

HTW logged out at 16-FEB-1995 13:13:33.15

Itemized resource charges, for this session, follow:

NODE: VAXTM1

ACCT: 9040

PROJ: GEMS0001

USER: HTW

UIC: [000710,000012]

BAUD:

START TIME: 16-FEB-1995 13:12:43.74

FINISH TIME: 16-FEB-1995 13:13:33.15

BILLING PERIOD: 950201

WEEKDAY: THURSDAY

TERMINAL PORT: VTA2789

DESCRIPTION OF CHARGE	QUANTITY	EXPENDITURE
ALL CHARGE LEVELS		
300 baud (Seconds)	49	0.0000
CPU TIME (Seconds)	2	0.3322
TOTAL FOR THIS SESSION		\$ 0.3322

\*\* Note: This total reflects the charges for this process only,  
subprocesses created during this session are accounted for  
separately

CLR PAD

NO CARRIER



## BLACK & VEATCH Waste Science, Inc.

400 Northridge Road, Suite 350, Atlanta, Georgia 30350, (404) 594-2500, Fax: (404) 587-2930

US EPA -- Region IV  
Site Inspection Prioritization  
Work Assignment No. 12

BVWS Project 52012.523  
April 27, 1995

Mr. Narindar Kumar  
Chief, Site Assessment Section  
U.S. Environmental Protection Agency  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Subject: Draft Site Inspection Prioritization  
Metal Resources, Inc.  
Loudon, Loudon County, TN  
EPA ID No. TND991279746

*[Handwritten signature]*  
4/1/2

Dear Mr. Kumar:

Enclosed please find one copy of the Draft Site Inspection Prioritization for Metal Resources, Inc. in Loudon, Loudon County, Tennessee. If you have any questions, please contact me at 404/643-2320.

Very truly yours,

BLACK & VEATCH Waste Science, Inc.

*Victor Blix*  
Victor Blix  
Project Manager

fw  
Enclosures

cc: Doug Thompson, EPA PO, w/o enclosures  
Deborah Davidson, EPA CO, w/o enclosures  
Earl Bozeman, EPA WAM, w/o enclosures

REC'D

APR 28 1995

WVWS



## BLACK & VEATCH Waste Science, Inc.

2300 Clayton Road, Suite 1280, Concord, California 94520-2100, (510) 246-8010, Fax: (510) 246-8082

U.S. Environmental Protection Agency  
Metal Resources, Inc.  
Work Assignment 12

BVWS Project 52012.523  
April 10, 1995

Mr. Narindar Kumar, Chief  
Site Assessment Section  
U.S. Environmental Protection Agency  
345 Courtland Street, NE  
Atlanta, Georgia 30365

9/25/95  
NFRAG  
-Refer to TDSF PERM  
BM

APR 28 1995

WVWS

Subject: Site Inspection Prioritization  
Metal Resources, Inc.  
Loudon, Loudon County, Tennessee  
EPA ID TND991279746

Wd 4142

Dear Mr. Kumar:

BLACK & VEATCH Waste Science, Inc. (Black & Veatch) has been tasked by the U.S. Environmental Protection Agency (EPA) to conduct a Site Inspection Prioritization for the Metal Resources, Inc. (Metal Resources) site (the site) in Loudon, Loudon County, Tennessee. In accordance with the scope of work, a preliminary Hazard Ranking System (HRS) score was prepared to determine the need for future activities at the site.

The site is located on Highway 2 North in Loudon, Tennessee in the Blair Bend Industrial Park (Ref. 1, p. 6). From approximately 1981 to 1990, Metal Resources refined scrap aluminum at the site (Refs. 2, p. 1; 3). Prior to 1981, the site was undeveloped farm and forest land (Ref. 2, p. 1). Metal Resources filed a Resource Conservation Recovery Act (RCRA) Part A application for the site in 1981, but withdrew the permit in 1982 after determining that it did not generate hazardous materials (Ref. 1, p. 1). Metal Resources, Inc. ceased operations at the site in 1990 and moved its facilities to a new site located approximately 0.5 mile south of the original location (Ref. 4, p. 5). Based on observations made during an offsite reconnaissance conducted on February 5, 1995, by Black & Veatch personnel, the site is currently an unoccupied, vacant lot with no indications of past activities evident (Ref. 4, p. 6).

On November 30, 1983, an inspection by the Tennessee Department of Health and Environment, Division of Solid Waste Management (DSWM) concluded that no hazardous wastes were generated, treated, or stored at the site as the result of refining operations (Ref. 1, p. 1). A later visit to the site by DSWM on June 14, 1984, reported that due to the relatively recent start date of Metal Resources and the lack of a past history of development, this site does not fall under the RCRA program (Ref. 2, p. 1). Available file material does not indicate that environmental samples were collected during the inspections conducted at the site. File material does not indicate whether any uncontrolled spills occurred at the site.

Potable water within a 4-mile radius of the site is supplied by surface water along with municipal springs and private groundwater wells (Ref. 4, pp. 9, 11, 13, 15). Wells in the area are typically completed in the fractured regolith surficial aquifer (Refs. 3, p. 2; 4, p. 13). There are two municipal drinking water springs within 4 miles of the site: the Piney Utilities spring, which is located 1.75 miles south of the site and provides water to approximately 2,870 people, and the Loudon City Water System (LCWS) spring located 3.5 miles west of the site, which serves approximately 584 people (Refs. 4, pp. 11, 13; 5; 6). LCWS also obtains potable water from a surface water intake located on the Tennessee River (Ref. 4, p. 13). The nearest private well is located approximately 1.5 miles south of the site (Ref. 5). The estimated number of people using private wells and springs for drinking water was based on a house count from topographic maps of areas not serviced by municipal water systems (Refs. 5; 6). The estimated total population using drinking water derived from municipal springs and private wells within a 4-mile radius of the site is radially distributed as follows: 0 - 0.25 mile, 0 persons; 0.25 - 0.50 mile, 0 persons; 0.50 - 1 mile, 0 persons; 1 - 2 miles, 3,010 persons; 2 - 3 miles, 231 persons; 3 - 4 miles, 1,092 persons (Refs. 4, pp. 9, 11, 13, 15; 5; 6).

Surface water runoff from the site flows overland approximately 2,000 feet west before entering the Tennessee River at Watts Bar Lake (Tennessee River Mile Marker 592) (Ref. 5). Flow continues west along the Tennessee River for the remainder of the 15-mile surface water pathway (Ref. 5). The Loudon City Water System operates a surface water intake located on the opposite bank of the Tennessee River directly across from the probable point of entry (Refs. 4, p. 13; 5). This surface water intake provides

water to approximately 5,258 people (Refs. 4, p. 13; 6). No other surface water intakes are located along the surface water pathway. The flow rate of the Tennessee River at Watts Barr Lake varies between 300 and 1,000 cubic feet per second (Ref. 7). The Tennessee River at Watts Bar Lake is used for commercial fishing and has an annual yield of approximately 55,500 pounds (Ref. 8). The site is estimated to reside within the 500-year floodplain of the Tennessee River (Ref. 9). The habitats of the federally endangered pink mucket mussel (*Lampsilis abrupta*) and the federally threatened snail darter (*Percina tanasi*) have been identified along the 15-mile surface water pathway (Ref. 10, pp. 5, 6). No wetlands have been identified along the 15-mile surface water pathway (Refs. 5; 10, p. 5).

The estimated population within a 4-mile radius of the site is 8,197, and is radially distributed as follows: 0 - 0.25 mile, 58 persons; 0.25 - 0.50 mile, 135 persons; 0.50 - 1 mile, 1,067 persons; 1 - 2 miles, 2,254 persons; 2 - 3 miles, 5,001; 3 - 4 miles, 928 persons (Ref. 11). The nearest residence is located approximately 0.75 mile south of the site (Ref. 5). It is estimated that fewer than 100 persons were employed at the site during its operational years. The site is currently unfenced and easily accessible; however, public use of the site for recreational or other purposes is unlikely (Ref. 4, p. 6). No wetlands or endangered or threatened species have been identified within the 4-mile radius of the site (Ref. 5).

Due to the low number of pathway targets and low overall site score, no further action is recommended at the Metal Resources, Inc. site. Attached are all references used during this evaluation.

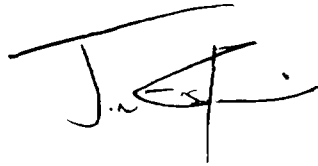
Metal Resources, Inc.

Page 4

If you have any questions or comments, please contact me at (510) 246-8010 or Victor Blix at (404) 643-2320.

Sincerely,

**BLACK & VEATCH Waste Science, Inc.**

A handwritten signature in black ink, appearing to read 'J. Erskine', with a horizontal line above it.

Jon Erskine  
Site Geologist

skr  
Enclosure

## REFERENCES

1. State of Tennessee, Department of Public Health, Division of Solid Waste Management, Potential Hazardous Waste Site Preliminary Assessment Worksheet, Metal Resources, Inc., TND991279746, November 30, 1983.
2. Davis, Kenneth R., State of Tennessee, Department of Public Health, Division of Solid Waste Management, Office Correspondence, June 14, 1984. Subject: Metal Resources, Inc., TND991279746.
3. NUS Corporation, Draft Screening Site Inspection, Phase 1, Metal Resources, Inc., EPA ID No. TND991279746, March 1, 1990.
4. Erskine, Jon, BLACK & VEATCH Waste Science, Inc., Logbook for Documentation of Metal Resources, Inc. Site Visit, February 5-7, 1995.
5. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee: Cave Creek 1968 (Photorevised 1989); Philadelphia 1974; Lenoir City 1968 (Photorevised 1986); Loudon 1952 (Photorevised 1984); scale 1:24,000.
6. U.S. Department of Commerce, Bureau of the Census, 1990 Census of Population and Housing Summary Population and Housing Characteristics, Tennessee, 1990 CPH-1-44, August 1991, p. 63.
7. U.S. Geological Survey, Water Resources Data, Tennessee Water Year 1993. Water-Data Report TN-93-1 (Nashville, Tennessee 1994).
8. Tennessee Wildlife Resources Agency, Fisheries Report, 94-14, 1993 Commercial Fishing Report, March 1994.
9. U.S. Department of Housing and Urban Development, Flood Insurance Rate Map: Town of Loudon, Tennessee, Loudon County.
10. ERCE, Report of Survey For: Threatened and Endangered Species, Wetlands, Stream Identification at a Proposed Solid Waste Landfill Site, Blair Bend Industrial Park, Loudon County, Tennessee, December 1991.

11. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base. Compiled from U.S. Bureau of the Census data, 1983.



**CONFIDENTIAL**  
**Hazard Ranking System Preliminary Score**  
for  
**METAL RESOURCES, INC.**  
**Loudon, Loudon County, Tennessee**  
EPA ID TND991279746

The preliminary HRS score for the Metal Resources, Inc. site was calculated using the Site Inspection Worksheets. Pathways evaluated include groundwater migration, surface water migration, soil exposure, and air migration. Reportedly, no hazardous wastes were generated, treated, stored, or disposed at the site. Furthermore, file material does not indicate the presence of any hazardous substance at the site at any time. In addition, no environmental samples have been collected at the site. Therefore, due to the lack of data from the site, Maximum Waste Characteristics were used to evaluate each pathway. A Hazardous Waste Quantity (HWQ) factor value of 10 was assigned for all pathways based on the total area of the site (approximately 5 acres).

The groundwater migration pathway HRS score is based on an assumed observed release to the fractured regolith aquifer underlying the site. An observed release was assumed to evaluate worst case conditions at the site. Non-karst target values were used for scoring purposes. There are two municipal springs located within 4 miles of the facility; the Piney Utilities spring, which is located 1.75 miles south of the site and provides water to 2,870 people, and the Loudon City Water System spring, which is located 3.5 miles west of the site and provides water to an estimated 584 people. Potential private groundwater users were determined based on a house count of areas not serviced by municipal water. Approximately 4,333 people are estimated to obtain water from private wells and springs within the 4-mile radius. Low target values resulted in a low groundwater pathway score.

The surface water migration pathway HRS score was based on a potential release and low target values derived from downstream populations, sensitive environments, and recreational fishing areas. The location of the probable point of entry along the Tennessee River was assumed based on the area's topographic features. However, other probable points of entry are also likely due to drainage impediments such as roads and sewers within the city of Loudon. The City of Loudon Water System obtains its water solely from one surface water intake located on the opposite bank of the Tennessee River, directly across the assumed probable point of entry.

The soil exposure pathway was evaluated based on an assumed release to surficial soils. The pathway score was limited by the lack of a resident population and low nearby population target values.

The air migration pathway was scored based on potential to release. Approximately 8,197 people reside within 4 miles of the site. No wetlands or designated threatened or endangered species have been specifically identified within a 4-mile radius of the site.

Due to low target values and a low overall site score, no further action is recommended at the site. An observed release to surface water scenario was not scored due to the low likelihood of runoff reaching the Tennessee River. The site is surrounded by roads, gas stations, and large factories, which would alter the natural direction of runoff and decrease the probability of runoff reaching the river. An observed release to surface water would elevate the surface water pathway score and slightly increase the overall site score; however, the overall site score would still be below 28.5 (16.5). Due to the low sensitivity of the site score to an observed release to surface water, and the difficulty of directly attributing sample results to the site given its industrial setting, sampling is not recommended at the site.

## **HRS SCORING SUMMARY**

$S_{gw}$	=	14.29
$S_{sw}$	=	0.69
$S_{soil}$	=	0.003
$S_{air}$	=	2.06

---

**OVERALL SCORE = 7.23**

Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

### GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
1. Observed Release	550	<u>550</u>
2. Potential to Release		
2a. Containment	10	<u>10</u>
2b. Net Precipitation	10	<u>6</u>
2c. Depth to Aquifer	5	<u>3</u>
2d. Travel Time	35	<u>15</u>
2e. Potential to Release (lines 2a x (2b + 2c + 2d))	500	<u>240</u>
3. Likelihood of Release (higher of lines 1 and 2e)	550	<u>550</u>

#### Waste Characteristics

4. Toxicity/Mobility	a	<u>10,000</u>
5. Hazardous Waste Quantity	a	<u>10</u>
6. Waste Characteristics	100	<u>18</u>
7. Nearest Well	50	<u>5</u>
8. Population		
8a. Level I Concentrations	b	<u>0</u>
8b. Level II Concentrations	b	<u>0</u>
8c. Potential Contamination	b	<u>109.1</u>
8d. Population (lines 8a + 8b + 8c)	b	<u>109.1</u>
9. Resources	5	<u>5</u>
10. Wellhead Protection Area	20	<u>0</u>
11. Targets (lines 7 + 8d + 9 + 10)	b	<u>119.1</u>

#### Ground Water Migration Score for an Aquifer

12. Aquifer Score [(lines 3 x 6 x 11)/82,500] <sup>c</sup>	100	<u>14.29</u>
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#### Ground Water Migration Pathway Score

13. Pathway Score (SGW), (highest value from line 12 for all aquifers evaluated) <sup>c</sup>	100	<u>14.29</u>
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- a Maximum value applies to waste characteristics category  
b Maximum value not applicable  
c Do not round to nearest integer

Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

### Drinking Water Threat

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
1. Observed Release	550	<u>0</u>
2. Potential to Release by Overland Flow		
2a. Containment	10	<u>10</u>
2b. Runoff	25	<u>11</u>
2c. Distance to Surface Water	25	<u>9</u>
2d. Potential to Release by Overland Flow [lines 2a x (2b + 2c)]	500	<u>200</u>
3. Potential to Release by Flood		
3a. Containment (Flood)	10	<u>10</u>
3b. Flood Frequency	50	<u>7</u>
3c. Potential to Release by Flood (lines 3a x 3b)	500	<u>70</u>
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	<u>270</u>
5. Likelihood of Release (higher of lines 1 and 4)	550	<u>270</u>

### Waste Characteristics

6. Toxicity/Persistence	a	<u>10,000</u>
7. Hazardous Waste Quantity	a	<u>10</u>
8. Waste Characteristics	100	<u>18</u>

### Targets

9. Nearest Intake	50	<u>0</u>
10. Population		
10a. Level I Concentrations	b	<u>0</u>
10b. Level II Concentrations	b	<u>0</u>
10c. Potential Contamination	b	<u>5.2</u>
10d. Population (lines 10a + 10b + 10c)	b	<u>5.2</u>
11. Resources	5	<u>5</u>
12. Targets (lines 9 + 10d + 11)	b	<u>10.2</u>

### Drinking Water Threat Score

13. Drinking Water Threat Score [(lines 5 x 8 x 12)/82,500], subject to a maximum of 100)	100	<u>0.6</u>
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Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

**SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET  
(CONTINUED)**

**Human Food Chain Threat**

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
14. Likelihood of Release (same value as line 5)	550	270

Waste Characteristics

15. Toxicity/Persistence/Bioaccumulation	a	5E+08
16. Hazardous Waste Quantity	a	10
17. Waste Characteristics	1000	180

Targets

18. Food Chain Individual	50	0
19. Population		
19a. Level I Concentrations	b	0
19b. Level II Concentrations	b	0
19c. Potential Contamination	b	0
19d. Population (lines 10a + 10b + 10c)	b	0
20. Targets (lines 18 + 19d)	b	0

**Human Food Chain Threat Score**

21. Human Food Chain Threat Score [(lines 14 x 17 x 20)/82,500], subject to a maximum of 100)	100	0
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Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

**SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET  
(CONTINUED)**

**Environmental Threat**

<u>Factor Categories and Factors</u>	<u>Maximum Value</u>	<u>Value Assigned</u>
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Likelihood of Release

22. Likelihood of Release (same value as line 5)	550	<u>270</u>
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Waste Characteristics

23. Ecosystem Toxicity/Persistence/Bioaccumulation	a	<u>5E+08</u>
24. Hazardous Waste Quantity	a	<u>10</u>
25. Waste Characteristics	1,000	<u>180</u>

Targets

26. Sensitive Environments		
26a. Level I Concentrations	b	<u>0</u>
26b. Level II Concentrations	b	<u>0</u>
26c. Potential Contamination	b	<u>0.15</u>
26d. Sensitive Environments (lines 26a + 26b + 26c)	b	<u>0.15</u>
27. Targets (value from line 26d)	b	<u>0.15</u>

**Environmental Threat Score**

28. Environmental Threat Score [(lines 22 x 25 x 27)/ 82,500, subject to a maximum score of 60]	60	<u>0.09</u>
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**Surface Water Overland/Flood Migration Component Score for a Watershed**

29. Watershed Score <sup>c</sup> (lines 13 + 21 + 28, subject to a maximum score of 100)	100	<u>0.69</u>
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**Surface Water Overland/Flood Component Score**

30. Component Score (SSW) <sup>c</sup> (highest score from line 29 for all watersheds evaluated, subject to a maximum score of 100)	100	<u>0.69</u>
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- a Maximum value applies to waste characteristics category  
b Maximum value not applicable  
c Do not round to nearest integer

Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

## SOIL EXPOSURE PATHWAY SCORESHEET

### **Resident Population Threat**

Factor Categories and Factors	Maximum Value	Value Assigned
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#### Likelihood of Release

1. Likelihood of Exposure	550	<u>550</u>
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#### Waste Characteristics

2. Toxicity	a	<u>10,000</u>
3. Hazardous Waste Quantity	a	<u>10</u>
4. Waste Characteristics	100	<u>18</u>

#### Targets

5. Resident Individual	50	<u>0</u>
6. Resident Population		
6a. Level I Concentrations	b	<u>0</u>
6b. Level II Concentrations	b	<u>0</u>
6c. Resident Population (lines 6a + 6b)	b	<u>0</u>
7. Workers	15	<u>0</u>
8. Resources	5	<u>0</u>
9. Terrestrial Sensitive Environments	c	<u>0</u>
10. Targets (lines 5 + 6c + 7 + 8 + 9)	b	<u>0</u>

### **Resident Population Threat Score**

11. Resident Population Threat [(lines 1 x 4 x 10)/82,500]	b	<u>0</u>
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Site Name: Metal Resources, Inc.

Location: Loudon, Loudon County, Tennessee

### SOIL EXPOSURE PATHWAY SCORESHEET (continued)

#### **Nearby Population Threat**

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
12. Attractiveness/Accessibility	100	<u>10</u>
13. Area of Contamination	100	<u>20</u>
14. Likelihood of Exposure	500	<u>5</u>

#### Waste Characteristics

15. Toxicity	a	<u>10,000</u>
16. Hazardous Waste Quantity	a	<u>10</u>
17. Waste Characteristics	100	<u>18</u>

#### Targets

18. Nearby Individual	1	<u>1</u>
19. Population Within 1 Mile	b	<u>1.3</u>
20. Targets (lines 18 + 19)	b	<u>2.3</u>

#### **Nearby Population Threat Score**

21. Nearby Population Threat (lines 14 x 17 x 20)/(82,500)	b	<u>0.003</u>
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#### **Soil Exposure Pathway Score**

22. Soil Exposure Pathway Score (Ss), (lines 11 + 21, subject to a maximum score of 100)	100	<u>0.003</u>
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a Maximum value applies to waste characteristics category.

b Maximum value not applicable.

c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum score of 60.

d Do not round to nearest integer.



Site Name: Metal Resources, Inc

Location: Loudon, Loudon County, Tennessee

### AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
<u>Likelihood of Release</u>		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	
2b. Particulate Potential to Release	500	0
2c. Potential to Release (higher of lines 2a and 2b)	500	0
3. Likelihood of Release (higher of lines 1 and 2c)	550	500

#### Waste Characteristics

4. Toxicity/Mobility	a	10,000
5. Hazardous Waste Quantity	a	10
6. Waste Characteristics	100	18

#### Targets

7. Nearest Individual	50	7
8. Population		
8a. Level I Concentrations	b	0
8b. Level II Concentrations	b	0
8c. Potential Contamination	b	6.87
8d. Population (lines 8a + 8b + 8c)	b	6.87
9. Resources	5	5
10. Sensitive Environments		
10a. Actual Contamination	c	0
10b. Potential Contamination	c	0
10c. Sensitive Environments (lines 10a + 10b)	c	0
11. Targets (lines 7 + 8d + 9 + 10c)	b	18.87

#### Air Migration Pathway Score

12. Pathway Score (SA) [(lines 3 x 6 x 11)/82,500]d	100	2.06
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a Maximum value applies to waste characteristics category

b Maximum value not applicable

c No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum score of 60.

d Do not round to nearest integer

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## SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER

TND991279746

SITE LOCATION			
SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE Metal Resources Inc.			
STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFIER P.O. Box 386, Blair Bend Industrial Park			
CITY Loudon	STATE TN	ZIP CODE 37774	TELEPHONE ( )
COORDINATES: LATITUDE and LONGITUDE 35° 44' 39" / 84° 18' 40"		TOWNSHIP, RANGE, AND SECTION	

OWNER/OPERATOR IDENTIFICATION					
OWNER Same			OPERATOR		
OWNER ADDRESS			OPERATOR ADDRESS		
CITY			CITY		
STATE	ZIP CODE	TELEPHONE ( )	STATE	ZIP CODE	TELEPHONE ( )

SITE EVALUATION		
AGENCY/ORGANIZATION USEPA Region IV		
INVESTIGATOR Black & Veatch Waste Science		
CONTACT Jo. Erickson		
ADDRESS 2300 Clayton Rd S.W. 1280		
CITY Concord	STATE CA	ZIP CODE 94520
TELEPHONE (510) 246-8010		

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### GENERAL INFORMATION

**Site Description and Operational History:** Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

See Report

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### GENERAL INFORMATION (continued)

**Site Sketch:** Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.

See Report

## GENERAL INFORMATION (continued)

**Source Descriptions:** Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

## SOURCE TYPES

**Landfill:** A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

**Surface Impoundment:** A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

**Drum:** A portable container designed to hold a standard 55-gallon volume of wastes.

**Tank and Non-Drum Container:** Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

**Contaminated Soil:** An area or volume of soil onto which hazardous substances have been spilled, spread, disposed, or deposited.

**Pile:** Any non-containerized accumulation above the ground surface of solid, non-flowing wastes; includes open dumps. Some types of waste piles are:

- **Chemical Waste Pile:** A pile consisting primarily of discarded chemical products, by-products, radioactive wastes, or used or unused feedstocks.
- **Scrap Metal or Junk Pile:** A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- **Tailings Pile:** A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- **Trash Pile:** A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

**Land Treatment:** Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

**Other:** Sources not in categories listed above.

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Excerpt from Preliminary  
Resolutions + 3 pages.

For some sites, the manner in which the waste was deposited (e.g., creation of a waste pile) would be a primary defining characteristic and it would be appropriate to score the source type as a waste pile.

S-45

Issue: What are some definitions that can be used to assist in identifying and characterizing the source(s) at a site?

Preliminary Resolution: The following definitions are provided:

Active Fire Area: An area that is presently burning or smoldering and which, without remedial action, will continue to do so intently.

Buried/Below-ground Containers or Tanks: A container or tank the entire surface area of which is situated completely below the surface and which is not visible; however, a buried/below-ground tank may have a small fraction of its associated piping above the surface.

Buried/Backfilled Surface Impoundment: A surface impoundment that has been completely covered with soil after final deposition of waste materials.

Burn Pit: An uncovered area on or on the land surface that was at one time used to burn waste materials or was otherwise significantly inflamed but is not presently burning.

Containers or Tanks: (1) Any stationary device designed to contain an accumulation of waste, which is constructed primarily of non-earthen materials (such as wood, concrete, steel, or plastic) which provides structural support. (2) Any portable device in which waste is stored or otherwise handled.

Contaminated Soil (excluding land treatment): (1) An area of soil that contains concentrations of a hazardous substance significantly above background. Evidence that the substance detected is related to the site must be provided to substantiate use of this descriptor. (2) An area on which available evidence demonstrates that hazardous substances were spilled. Note: somewhat similar to area of observed contamination but without the requirement that the hazardous substance be located within two feet of the surface.

Landfarm/Land treatment: Landfarming or land treatment is a method of waste management in which liquid waste or sludges are spread over land and tilled. It also applies to the shallow injection of liquids. The distinguishing characteristics of landfarms and land treatment facilities is the shallow injection or tilling of the soil.

Landfill: A landfill may be either a cleared area on the ground surface or a man-made or natural hole in the ground, containing wastes. The landfill may have been backfilled with the soil either after or contemporary with the waste disposal, covering the wastes from view. The landfill may have been formed either by excavating the hole or by forming earthen walls around a cleared area. Due to weathering, erosion, and similar phenomena, however, once-

buried wastes in a landfill may become exposed, e.g., partially buried drums. The contents of a landfill may include nearly any or all types of wastes including buried drums.

Piles (by type):

Chemical Waste Pile: A pile consisting primarily of discarded chemical products (whether marketable or not), by-products, or unused feedstocks.

Scrap Metal or Junk Pile: A pile consisting primarily of scrap metal or discarded durable goods such as appliances, automobiles or auto parts, and furniture.

Tailings Pile: A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.

Trash Pile: A pile consisting of primarily paper, garbage, or discarded non-durable goods such as food packaging (e.g., "refuse").

Other: A term reserved for use when a pile of indeterminate origin has accumulated and is shown to contain certain hazardous substances, contaminants, pollutants, or radionuclides.

Surface Impoundment: A natural topographic depression, man-made excavation, bermed, or diked area, primarily formed from earthen materials (lined or unlined) which was designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges that were not backfilled or otherwise covered. The distinguishing characteristics of a surface impoundment are the emphasis on liquid waste and the general lack of soil cover. Two types of surface impoundments are distinguished: those at which the deposited liquid has evaporated, volatilized, or leached (dry) and those with exposed liquid (other). Synonymous terms include lagoon pond, aeration pit, settling pond, and tailings pond.

S-46 **Issue:** What are examples of 'other' source types?

**Preliminary Resolution:** Anything not specifically listed or that does not clearly fit into one of the listed source types, e.g., contaminated buildings, contaminated surface water sediments with no identified source, and contaminated equipment. Additional other source types may include: storm drains, dry wells, injection wells, ground water plumes with no identified source, radioactively contaminated equipment, etc. (See also Preliminary Resolution S-48.)

S-47 **Issue:** Are seeps and leachate considered sources?

**Preliminary Resolution:** Seeps and leachate are migration from sources, not areas of deposition, and thus are not sources for the migration pathways. However, there is a

good probability that the soils beneath seeps and leachate are contaminated. For the purposes of scoring the soil exposure pathway, therefore, seeps and leachate of hazardous substances can be considered observed contamination of the surface.

Seeps and leachate are also useful in attributing observed releases to sources. In some cases, seeps and leachate have been used to establish observed releases by direct observation to ground water and/or surface water.

**S-48**      **Issue:** Are buildings contaminated with radioactive materials considered sources? If so, what type?

**Preliminary Resolution:** Yes, they would be in the 'other' category of sources unless they fit a specific description (e.g., demolished building could be a pile).

**S-49**      **Issue:** Within a large source (e.g., landfill), what should be used as the starting point for measuring target distance limits?

**Preliminary Resolution:** For measuring target distances in pathways, use the source boundaries, which may be established in various ways (e.g., photographs, fill above grade). The exception would be ground water plumes and surface water sediments with no identified source.

- For such ground water plumes, use the center of the observed area of ground water contamination, as specified in Section 3.0.1.1 of the HRS rule.
- For such surface water sediments, if there is a clearly defined direction of flow, use the point of observed sediment contamination that is farthest upstream as specified in Section 4.1.1.2 of the HRS rule. If there is no clearly defined direction of flow, use the center of the area of observed sediment contamination as specified in Section 4.1.1.2 of the rule.

**S-50**      **Issue:** How is thickness of cover measured – maximum or minimum?

**Preliminary Resolution:** For purposes of scoring containment, thickness of cover is measured at the point of minimum thickness. In some cases, cracks may indicate a good place to measure the minimum thickness.



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### GENERAL INFORMATION (continued)

Source Description: include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

Source is considered as contaminated soil. Metal Resources  
is no longer located at the site. The site is ~~now~~ currently,  
an empty lot at the entrance to an industrial park. No  
run-off controls are present.

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (See HRS Tables 2-5, 2-6, and 5-2).

No sampling data is available, and the <sup>exact</sup> size of  
the site is uncertain. Therefore, a Hazardous Waste  
Quantity of 10 is assigned in accordance with  
HRS section

Attach additional pages, if necessary

HWQ =

10

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SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete  HWQ = 10 if Hazardous Constituent Quantity data are not complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft <sup>3</sup> ≤ 250,000 yd <sup>3</sup>	>6.75 million to 675 million ft <sup>3</sup> >250,000 to 25 million yd <sup>3</sup>
	Surface impoundment	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
	Drums	≤ 1,000 drums	>1,000 to 100,000 drums
	Tanks and non-drum containers	≤ 50,000 gallons	>50,000 to 5 million gallons
	Contaminated soil	≤ 6.75 million ft <sup>3</sup> ≤ 250,000 yd <sup>3</sup>	>6.75 million to 675 million ft <sup>3</sup> >250,000 to 25 million yd <sup>3</sup>
	Pile	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
	Other	≤ 6,750 ft <sup>3</sup> ≤ 250 yd <sup>3</sup>	>6,750 to 675,000 ft <sup>3</sup> >250 to 25,000 yd <sup>3</sup>
D Area	Landfill	≤ 340,000 ft <sup>2</sup> ≤ 7.8 acres	>340,000 to 34 million ft <sup>2</sup> >7.8 to 780 acres
	Surface impoundment	≤ 1,300 ft <sup>2</sup> ≤ 0.029 acres	>1,300 to 130,000 ft <sup>2</sup> >0.029 to 2.9 acres
	Contaminated soil	≤ 3.4 million ft <sup>2</sup> ≤ 78 acres	> 3.4 million to 340 million ft <sup>2</sup> > 78 to 7,800 acres
	Pile	≤ 1,300 ft <sup>2</sup> ≤ 0.029 acres	>1,300 to 130,000 ft <sup>2</sup> >0.029 to 2.9 acres
	Land treatment	≤ 27,000 ft <sup>2</sup> ≤ 0.62 acres	>27,000 to 2.7 million ft <sup>2</sup> >0.62 to 62 acres

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisors for Assigning Source WQ Values	(Column 2) Source Type	(Column 1) TIER
>10,000 to 1 million lbs	> 1 million lbs	lbs + 1	N/A	A Hazardous Constituent Quantity
>50 million to 5 billion lbs	> 5 billion lbs	lbs + 5,000	N/A	B Hazardous Wastestream Quantity
>675 million to 67.5 billion ft <sup>3</sup> >25 million to 2.5 billion yd <sup>3</sup>	> 67.5 billion ft <sup>3</sup> > 2.5 billion yd <sup>3</sup>	ft <sup>3</sup> + 67,500 yd <sup>3</sup> + 2,500	Landfill	C Volume
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Surface Impoundment	
>100,000 to 10 million drums	> 10 million drums	drums + 10	Drums	
>5 million to 500 million gallons	> 500 million gallons	gallons + 500	Tanks and non-drum containers	
>675 million to 67.5 billion ft <sup>3</sup> >25 million to 2.5 billion yd <sup>3</sup>	> 67.5 billion ft <sup>3</sup> > 2.5 billion yd <sup>3</sup>	ft <sup>3</sup> + 67,500 yd <sup>3</sup> + 2,500	Contaminated Soil	
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Pile	
>675,000 to 67.5 million ft <sup>3</sup> >25,000 to 2.5 million yd <sup>3</sup>	> 67.5 million ft <sup>3</sup> > 2.5 million yd <sup>3</sup>	ft <sup>3</sup> + 67.5 yd <sup>3</sup> + 2.5	Other	
>34 million to 3.4 billion ft <sup>2</sup> >780 to 78,000 acres	> 3.4 billion ft <sup>2</sup> >78,000 acres	ft <sup>2</sup> + 3,400 acres + 0.078	Landfill	D Area
>130,000 to 13 million ft <sup>2</sup> >2.9 to 290 acres	> 13 million ft <sup>2</sup> > 290 acres	ft <sup>2</sup> + 13 acres + 0.00029	Surface Impoundment	
> 340 million to 34 billion ft <sup>2</sup> > 7,800 to 780,000 acres	> 34 billion ft <sup>2</sup> > 780,000 acres	ft <sup>2</sup> + 34,000 acres + 0.78	Contaminated Soil	
> 130,000 to 13 million ft <sup>2</sup> > 2.9 to 290 acres	> 13 million ft <sup>2</sup> > 290 acres	ft <sup>2</sup> + 13 acres + 0.00029	Pile	
>2.7 million to 270 million ft <sup>2</sup> >62 to 6,200 acres	> 270 million ft <sup>2</sup> > 6,200 acres	ft <sup>2</sup> + 270 acres + 0.0062	Land Treatment	

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

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## HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for ground water, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1 <sup>a</sup> to 100	1 <sup>b</sup>
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

<sup>a</sup> If the WQ total is between 0 and 1, round it to 1.

<sup>b</sup> If the hazardous constituent quantity data are not complete, assign the score of 10.

# SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: 11 Total Resources

References \_\_\_\_\_

## Sources:

1. \_\_\_\_\_ 4. \_\_\_\_\_ 7. \_\_\_\_\_  
 2. \_\_\_\_\_ 5. \_\_\_\_\_ 8. \_\_\_\_\_  
 3. \_\_\_\_\_ 6. \_\_\_\_\_ 9. \_\_\_\_\_

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SOURCE	HAZARDOUS SUBSTANCE	TOXICITY	GROUND WATER PATHWAY		SURFACE WATER PATHWAY												AIR Pathway Toxicity mobility
					OVERLAND/FLOOD MIGRATION							GROUND WATER TO SURFACE WATER					
			GW Mobility (HRS Table 3-8)	Tox/Mobility Value (HRS Table 3-9)	Per (HRS Tables 4-10 and 4-11)	Tox/Per Value (HRS Table 4-12)	Bioacc Pot. (HRS Table 4-15)	Tox/Per/Bioacc Value (HRS Table 4-16)	Ecotox (HRS Table 4-19)	Ecotox/Per (HRS Table 4-20)	Ecotox/Per/Bioacc Value (HRS Table 4-21)	Tox/Mob/Per Value (HRS Table 4-26)	Tox/Mob/Per/Bioacc Value (HRS Table 4-28)	Ecotox/Mob/Per Value (HRS Table 4-29)	Ecotox/Mob/Per/Bioacc Value (HRS Table 4-30)		
	Mineral	---	---	---	1.0	---	50.0	---	---	---	---	n/s	n/s	n/s	n/s	N/A	
	Max leach	Characteristics															
		10,000	1	10,000	1	10,000	50,000	5x10 <sup>8</sup>	10,000	10,000	5x10 <sup>8</sup>	n/s	n/s	n/s	n/s	10,000	
				</													

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#### **Ground Water Observed Release Substances Summary Table**

On SI Table 4, list the hazardous substances associated with the site detected in ground water samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

#### **Ground Water Actual Contamination Targets Summary Table**

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI Table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population using the well as a Level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a Level II target for that aquifer.

[illegible]

Well ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Well ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Percent					Sum of Percents		Sum of Percents	

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# GROUND WATER PATHWAY GROUND WATER USE DESCRIPTION

**Describe Ground Water Use within 4 Miles of the Site:**  
**Describe generalized stratigraphy, aquifers, municipal and private wells**

The site is underlain by the Souder Shale of the Chickamauga Group of the late Ordovician age. The Souder Shale is typically a calcareous shale. Hydraulic conductivity values range from  $2.2 \times 10^{-6}$  to  $1.7 \times 10^{-4}$  cm/sec. The nearest well is located about 1 1/2 miles from the site. Piney UT/line draws water from a spring located 1 3/4 miles south of the site. The London City Water System draws water from a spring located 5 1/4 miles west of the site.

**Show Calculations of Ground Water Drinking Water Populations for each Aquifer:**  
**Provide apportionment calculations for blended supply systems.**  
County average number of persons per household: 2.54 Reference \_\_\_\_\_

Range	* PRIVATE GROUNDWATER USERS	** PINEY UT/line	*** LONDON CITY WATER SYSTEM	TOTAL
0-1/4	0	—	—	0
1/4-1/2	0	—	—	0
1/2-1	0	—	—	0
1-2	140	2870	—	3010
2-3	231	—	—	231
3-4	508	—	589	1097

\* Determined by a line survey of area not serviced by municipal water supply system.  
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\*\* Determined by Piney UT/line

\*\*\* Service Area of London City Water System well located 5 1/4 miles west of site.



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## GROUND WATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.	*550		
2. POTENTIAL TO RELEASE: Depth to aquifer: 70 feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.	240		
LR =		550	

## TARGETS

Are any wells part of a blended system? Yes _____ No _____ If yes, attach a page to show apportionment calculations.			
3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5).  Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total = _____			
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	109.1		
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	5		
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0		
7. RESOURCES: Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies.  <ul style="list-style-type: none"> <li>• Irrigation (5 acre minimum) of commercial food crops or commercial forage crops</li> <li>• Watering of commercial livestock</li> <li>• Ingredient in commercial food preparation</li> <li>• Supply for commercial aquaculture</li> <li>• Supply for a major or designated water recreation area, excluding drinking water use</li> </ul>	5		
Sum of Targets T=	119.1		

\* Due to the lack of environmental samples, an observed release is assumed to evaluate worst case conditions

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TABLE J-1  
GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

<u>Likelihood of Release to an Aquifer</u>	<u>Maximum Value</u>	<u>Value Assigned</u>
1. Observed Release	550	_____
2. Potential to Release		
2a. Containment	10	<u>10</u>
2b. Net Precipitation	10	<u>6</u>
2c. Depth to Aquifer	5	<u>3</u>
2d. Travel Time	35	<u>15</u>
2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	<u>240</u>
3. Likelihood of Release (higher of lines 1 and 2e)	550	_____
<u>Waste Characteristics</u>		
4. Toxicity/Mobility	<sup>a</sup>	_____
5. Hazardous Waste Quantity	<sup>a</sup>	_____
6. Waste Characteristics	100	_____
<u>Targets</u>		
7. Nearest Well	50	_____
8. Population		
8a. Level I Concentrations	b	_____
8b. Level II Concentrations	b	_____
8c. Potential Contamination	b	_____
8d. Population (lines 8a + 8b + 8c)	b	_____
9. Resources	5	_____
10. Wellhead Protection Area	20	_____
11. Targets (lines 7 + 8d + 9 + 10)	b	_____
<u>Ground Water Migration Score for an Aquifer</u>		
12. Aquifer Score [(lines 3 x 6 x 11) / 82,500] <sup>c</sup>	100	_____
<u>Ground Water Migration Pathway Score</u>		
13. Pathway Score ( $S_{gw}$ ), (highest value from line 12 for all aquifers evaluated) <sup>c</sup>	100	_____

<sup>a</sup>Maximum value applies to waste characteristics category.

<sup>b</sup>Maximum value not applicable.

<sup>c</sup>Do not round to nearest integer.

TABLE 3-2  
CONTAINMENT FACTOR VALUES FOR GROUND WATER MIGRATION PATHWAY

<u>All Sources (except surface impoundments, land treatment, containers, and tanks)</u>	<u>Assigned Value</u>
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures).	10
No liner.	10
No evidence of hazardous substance migration from source area, a liner, and:	
(a) None of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.	10
(b) Any one of the three items in (a) present.	9
(c) Any two of the items in (a) present.	7
(d) All three items in (a) present plus a functioning ground water monitoring system.	5
(e) All items in (d) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, functioning ground water monitoring system, and:	
(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover.	3

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TABLE 3-2 (Continued)

<u>All Sources (Concluded)</u>	<u>Assigned Value</u>
(g) None of the deficiencies in (f) present.	0
Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present.	0

C-15A.2  
a

\_\_\_\_\_

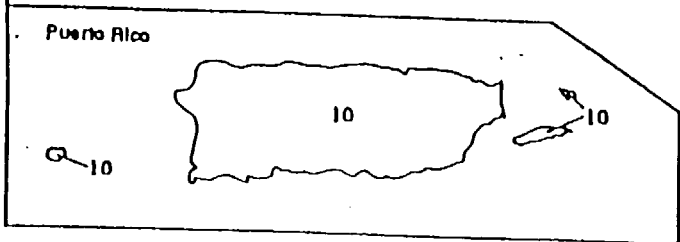


FIGURE 3.2  
NET PRECIPITATION FACTOR VALUES

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TABLE 3-5  
DEPTH TO AQUIFER FACTOR VALUES

<u>Depth To Aquifer<sup>1</sup></u> <u>(feet)</u>	<u>Assigned</u> <u>Value</u>
Less than or equal to 25	5
Greater than 25 to 250	3
Greater than 250	1

<sup>1</sup>Use depth of all layers between the hazardous substances and aquifer. Assign a thickness of 0 feet to any karst aquifer that underlies any portion of the sources at the site.

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TABLE 3-6  
HYDRAULIC CONDUCTIVITY OF GEOLOGIC MATERIALS

Type of Material	Assigned Hydraulic Conductivity <sup>a</sup> (cm/sec)
Clay; low permeability till (compact unfractured till); shale; unfractured metamorphic and igneous rocks	10 <sup>-8</sup>
Silt; loesses; silty clays; sediments that are predominantly silts; moderately permeable till (fine-grained, unconsolidated till, or compact till with some fractures); low permeability limestones and dolomites (no karst); low permeability sandstone; low permeability fractured igneous and metamorphic rocks	10 <sup>-6</sup>
Sands; sandy silts; sediments that are predominantly sand; highly permeable till (coarse-grained, unconsolidated or compact and highly fractured); peat; moderately permeable limestones and dolomites (no karst); moderately permeable sandstone; moderately permeable fractured igneous and metamorphic rocks	10 <sup>-4</sup>
Gravel; clean sand; highly permeable fractured igneous and metamorphic rocks; permeable basalt; karst limestones and dolomites	10 <sup>-2</sup>

<sup>a</sup>Do not round to nearest integer.

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TABLE 3-7  
TRAVEL TIME FACTOR VALUES<sup>a</sup>

Hydraulic Conductivity (cm/sec)	Thickness of Lowest Hydraulic Conductivity Layer(s) <sup>b</sup> (feet)			
	Greater than 3 to 5	Greater than 5 to 100	Greater than 100 to 500	Greater than 500
Greater than or equal to $10^{-3}$	35	35	35	25
Less than $10^{-3}$ to $10^{-5}$	35	25	15	15
Less than $10^{-5}$ to $10^{-7}$	15	(15)	5	5
Less than $10^{-7}$	5	5	1	1

<sup>a</sup>If depth to aquifer is 10 feet or less or if, for the interval being evaluated, all layers that underlie a portion of the sources at the site are karst, assign a value of 35.

<sup>b</sup>Consider only layers at least 3 feet thick. Do not consider layers or portions of layers within the first 10 feet of the depth to the aquifer.



SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER  
TARGET POPULATIONS

SI Table 6a: Other Than Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile	0	20	4	17	53	184	522	1,833	5,214	16,325	52,137	163,246	521,360	1,632,455		
$> \frac{1}{4}$ to $\frac{1}{2}$ mile	0	18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$> \frac{1}{2}$ to 1 mile	0	9	1	5	17	52	167	523	1,669	5,224	16,884	52,239	166,835	522,385		
$> 1$ to 2 miles	3010	5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842	939	
$> 2$ to 3 miles	231	3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219	21	
$> 3$ to 4 miles	1092	2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596	131	
Nearest Well =		5													Sum =	
															1691	

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SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER  
TARGET POPULATIONS (continued)

SI Table 6b: Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Rel.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
$> \frac{1}{4}$ to $\frac{1}{2}$ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$> \frac{1}{2}$ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 1$ to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 2$ to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
$> 3$ to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
Nearest Well =															Sum =	

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## GROUND WATER PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS	Score	Data Type	Does not Apply
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	10		
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	10,000		
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)	18		

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to <10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

WC = 18

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE:

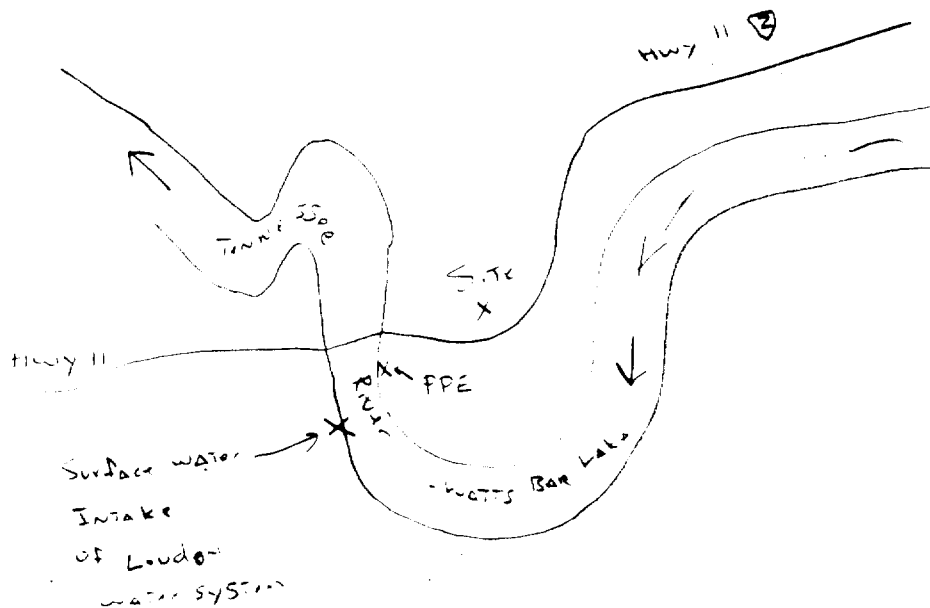
$$\begin{array}{r}
 (550) (11.9) (18) \\
 \hline
 LR \times T \times WC \\
 \hline
 82,500
 \end{array}$$

14.29  
 (Maximum of 100)

\* Note: Hazardous waste is not considered a threat to the ground water pathway score.

## SURFACE WATER PATHWAY

**Sketch of the Surface Water Migration Route:**  
 Label all surface water bodies. Include runoff route and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.



Distance to PPE: 2000' (0.37 mile 592)

Runoff route to PPE determined by topographic profile of the drainage area.

\* The S.T.C. resides in an urban or industrial area. Runoff must flow over roads, gas stations, factories, and other businesses before reaching the PPE.

## **SURFACE WATER PATHWAY**

### **Surface Water Observed Release Substances Summary Table**

On SI Table 7, list the hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x Persistence
- TPB = TP x bioaccumulation
- ETPB = EP x bioaccumulation (EP = ecotoxicity x persistence)

### **Drinking Water Actual Contamination Targets Summary Table**

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment samples detecting a hazardous substance at or beyond an intake, evaluate the intake as Level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all are N/A, evaluate the population served by the intake as a Level II target.

Sample ID	Hazardous Substance <i>and concentration</i>	Bckgrd. Conc.	Toxicity/ Persistence	Toxicity/ Persis./ Bioaccum	Ecotoxicity/ Persis/ Ecobioaccum	References
Highest Values						

Intake ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

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Intake ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population Served \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RID	% of RID
Highest Percent					Sum of Percents		Sum of Percents	

# **SURFACE WATER PATHWAY LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET**

## **LIKELIHOOD OF RELEASE- OVERLAND/FLOOD MIGRATION**

	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.	*		
2. POTENTIAL TO RELEASE: Distance to surface water: _____ (feet) If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood frequency.	270		
Distance to surface water <2500 feet		500	
Distance to surface water >2500 feet, and:			
Site in annual or 10-yr floodplain		500	
Site in 100-yr floodplain		400	
Site in 500-yr floodplain		300	
Site outside 500-yr floodplain	100		
Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2			
LR =	270		

## **LIKELIHOOD OF RELEASE GROUND WATER TO SURFACE WATER MIGRATION**

	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.			
NOTE: Evaluate ground water to surface water migration only for a surface water body that meets all of the following conditions:	N/S		
1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0.			
2) No aquifer discontinuity is established between the source and the above portion of the surface water body.			
3) The top of the uppermost aquifer is at or above the bottom of the surface water.			
Elevation of top of uppermost aquifer _____			
Elevation of bottom of surface water body _____			
2. POTENTIAL TO RELEASE: Use the ground water potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.			
LR =			

2a) 10

b) 11

c) 9

d) 200

3a) 0

e) 7

\* An assumed release was NOT evaluated due to the presence of roads, GAS STATION and factories residing between the site and the TPE, thereby greatly reducing the actual likelihood of a release to the Tennessee River. The presence of such industries makes it extremely difficult to achieve sample to the site.

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TABLE 4-1  
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
<b>DRINKING WATER THREAT</b>		
<u>Likelihood of Release</u>		
1. Observed Release	550	—
2. Potential to Release by Overland Flow		
2a. Containment	10	10 from p. C-23A 1/2
2b. Runoff	25	11 from p. C-23 E
2c. Distance to Surface Water	25	9 from p. C-23 F
2d. Potential to Release by Overland Flow (lines 2a x [2b + 2c])	500	200
3. Potential to Release by Flood		
3a. Containment (Flood)	10	10 from p. C-23 F 1/2
3b. Flood Frequency	50	7 from p. C-23 G
3c. Potential to Release by Flood (lines 3a x 3b)	500	70
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	270
5. Likelihood of Release (higher of lines 1 and 4)	550	270
<u>Waste Characteristics</u>		
6. Toxicity/Persistence	a	—
7. Hazardous Waste Quantity	a	—
8. Waste Characteristics	100	—
<u>Targets</u>		
9. Nearest Intake	50	—
10. Population		
10a. Level I Concentrations	b	—
10b. Level II Concentrations	b	—
10c. Potential Contamination	b	—
10d. Population (lines 10a + 10b + 10c)	b	—
11. Resources	5	—

M C-23A



TABLE 4-2  
CONTAINMENT FACTOR VALUES  
FOR SURFACE WATER MIGRATION PATHWAY

<u>All Sources</u> (except surface impoundments, land treatment, containers, and tanks)	<u>Assigned Value</u>
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures).	10
No evidence of hazardous substance migration from source area and:	
(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.	10
(b) Any one of the two items in (a) present.	9
(c) Any two of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner.	7
(d) All items in (c) present.	5
(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, and:	
(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover.	3
(g) None of the deficiencies in (f) present.	0

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TABLE 4-3  
DRAINAGE AREA VALUES

<u>Drainage Area</u> <u>(acres)</u>	<u>Assigned</u> <u>Value</u>
Less than 50	1
50 to 250	2
Greater than 250 to 1,000	3
Greater than 1,000	4

\* drainage area is area that contributes to overland flow across a source based on observing topographic map of the area.

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TABLE 4-4  
SOIL GROUP DESIGNATIONS

<u>Surface Soil Description</u>	<u>Soil Group Designation</u>
Coarse-textured soils with high infiltration rates (for example, sands, loamy sands)	A
Medium-textured soils with moderate infiltration rates (for example, <u>sandy</u> loams, loams)	B
Moderately fine-textured soils with low infiltration rates (for example, silty loams, silts, sandy clay loams)	C
✓ Fine-textured soils with very low infiltration rates (for example, clays, sandy clays, silty clay loams, clay loams, silty clays); or impermeable surfaces (for example, pavement)	D

get info from  
Soil Survey

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TABLE 4-5  
RAINFALL/RUNOFF VALUES

2-Year, 24-Hour Rainfall (inches)	Soil Group Designation			
	A	B	C	D
Less than 1.0	0	0	2	3
1.0 to less than 1.5	0	1	2	3
1.5 to less than 2.0	0	2	3	4
2.0 to less than 2.5	1	2	3	4
2.5 to less than 3.0	2	3	4	4
3.0 to less than 3.5	2	3	4	5
3.5 or greater	3	4	5	6

Rainfall frequency atlas

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TABLE 4-6  
RUNOFF FACTOR VALUES

Drainage Area Value	Rainfall/Runoff Value						
	0	1	2	3	4	5	6
1.	0	0	0	1	1	1	1
2	0	0	1	1	2	3	4
3	0	0	1	3	7	11	15
4	0	1	2	7	17	25	25

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TABLE 4-7  
DISTANCE TO SURFACE WATER FACTOR VALUES

Distance	Assigned Value
Less than 100 feet	25
100 feet to 500 feet	20
Greater than 500 feet to 1,000 feet	16
Greater than 1,000 feet to 2,500 feet	9
Greater than 2,500 feet to 1.5 miles	6
Greater than 1.5 miles to 2 miles	3

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TABLE 4-8  
CONTAINMENT (FLOOD) FACTOR VALUES

<u>Containment Criteria</u>	<u>Assigned Value</u>
Documentation that containment at the source is designed, constructed, operated, and maintained to prevent a washout of hazardous substances by the flood being evaluated	0
Other	10

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TABLE 4-9  
FLOOD FREQUENCY FACTOR VALUES

<u>Floodplain Category</u>	<u>Assigned Value</u>
Source floods annually	50
Source in 10-year floodplain	50
Source in 100-year floodplain	25
Source in 500-year floodplain	(7)
None of above	0

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**SURFACE WATER PATHWAY  
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET  
(CONTINUED)**

DRINKING WATER THREAT TARGETS	Score	Data Type	Refs																
<p>Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Intake Name</th> <th style="text-align: left;">Water Body Type</th> <th style="text-align: left;">Flow</th> <th style="text-align: left;">People Served</th> </tr> </thead> <tbody> <tr> <td>Lowell C.T. Water Dist</td> <td>Town River / Lake BA</td> <td>300-500</td> <td>5257</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>Are any intakes part of a blended system? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, attach a page to show apportionment calculations.</p> <p>3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8).</p> <p>Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total = _____</p>	Intake Name	Water Body Type	Flow	People Served	Lowell C.T. Water Dist	Town River / Lake BA	300-500	5257									0		
Intake Name	Water Body Type	Flow	People Served																
Lowell C.T. Water Dist	Town River / Lake BA	300-500	5257																
<p>4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.</p>	5.0																		
<p>5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.</p>	0																		
<p>6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies.</p> <ul style="list-style-type: none"> <li>• Irrigation (5 acre minimum) of commercial food crops or commercial forage crops</li> <li>• Watering of commercial livestock</li> <li>• Ingredient in commercial food preparation</li> <li>• Major or designated water recreation area, excluding drinking water use</li> </ul>	5		4500																
SUM OF TARGETS T=	25																		

\* Total customers of Lowell City Water System is 5,892 people. 90% of these customers receive water from this intake.

SI TABLE 9 (From HRS Table 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people									Pop. Value
			0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	
Minimal Stream (<10 cfs)	2	20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)	7	2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (> 100 to 1,000 cfs)	52.8	0	0	0.04	0.2	0.5	2	5	16	52	163	52.8
Large Stream to river (>1,000 to 10,000 cfs)		0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (> 10,000 to 100,000 cfs)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	16	
Very Large River (>100,000 cfs)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Shallow ocean zone or Great Lake (depth < 20 feet)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Deep ocean zone or Great Lake (depth > 200 feet)		0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (> 10 cfs)		10	0	2	9	26	82	261	817	2,607	8,163	
Nearest Intake =		10										Sum =
												82

References \_\_\_\_\_

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TABLE 4-14 (Concluded)

Type of Surface Water Body <sup>b</sup>	Number of People				
	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	3,000,001 to 10,000,000
Minimal stream ( $< 10$ cfs)	52,137	163,246	521,360	1,632,455	5,213,590
Small to moderate stream (10 to 100 cfs)	5,214	16,325	52,136	163,245	521,359
Moderate to large stream ( $> 100$ to 1,000 cfs)	521	1,633	5,214	16,325	52,136
Large stream to river ( $> 1,000$ to 10,000 cfs)	52	163	521	1,632	5,214
Large river ( $> 10,000$ to 100,000 cfs)	5	16	52	163	521
Very large river ( $> 100,000$ cfs)	0.5	2	5	16	52
Shallow ocean zone or Great Lake (depth $< 20$ feet)	5	16	52	163	521
Moderate ocean zone or Great Lake (depth 20 to 200 feet)	0.5	2	5	16	52
Deep zone or Great Lake (depth $> 200$ feet)	0.3	1	3	8	26
3-mile mixing zone in quiet flowing river ( $\geq 10$ cfs)	26,068	81,623	260,680	816,227	2,606,795

<sup>a</sup>Round the number of people to nearest integer. Do not round the assigned dilution-weighted population value to nearest integer.

<sup>b</sup>Treat each lake as a separate type of water body and assign it a dilution-weighted population value using the surface water body type with the same dilution weight from Table 4-13 as the lake. If drinking water is withdrawn from coastal tidal water or the ocean, assign a dilution-weighted population value to it using the surface water body type with the same dilution weight from Table 4-13 as the coastal tidal water or the ocean zone.

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## **SURFACE WATER PATHWAY**

### **Human Food Chain Actual Contamination Targets Summary Table**

On SI Table 10, list the hazardous substances detected in sediment, aqueous, sessile benthic organism tissue, or fish tissue samples (taken from fish caught within the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed releases detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

### **Sensitive Environment Actual Contamination Targets Summary Table**

On SI Table 11, list each hazardous substance detected in aqueous or sediment samples at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ References \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration	% of Cancer Risk Concentration	RID	% of RID
Highest Percent					Sum of Percents		Sum of Percents	

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environment ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Environment Value \_\_\_\_\_

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Sample ID	Hazardous Substance	Conc., (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					

Environment ID: \_\_\_\_\_ Sample Type \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Environment Value \_\_\_\_\_

Sample ID	Hazardous Substance	Conc., (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
Highest Percent					

# **SURFACE WATER PATHWAY (continued) HUMAN FOOD CHAIN THREAT WORKSHEET**

HUMAN FOOD CHAIN THREAT TARGETS	Score	Data Type	Refs													
<p>Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.</p>																
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Fishery Name <u>WATTS</u></td> <td>Water Body <u>Tennessee</u></td> <td>Flow <u>300,000</u> cfs</td> </tr> <tr> <td>Species <u>Bar</u></td> <td>Production <u>2,000</u></td> <td></td> </tr> <tr> <td>Species <u>Totals</u></td> <td>Production <u>55,505</u></td> <td>lbs/yr</td> </tr> <tr> <td>Species _____</td> <td>Production _____</td> <td>lbs/yr</td> </tr> </table>	Fishery Name <u>WATTS</u>	Water Body <u>Tennessee</u>	Flow <u>300,000</u> cfs	Species <u>Bar</u>	Production <u>2,000</u>		Species <u>Totals</u>	Production <u>55,505</u>	lbs/yr	Species _____	Production _____	lbs/yr				
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Species _____	Production _____	lbs/yr														
<p><b>FOOD CHAIN INDIVIDUAL</b></p> <p><b>7. ACTUAL CONTAMINATION FISHERIES:</b></p> <p>If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.</p> <p><b>8. POTENTIAL CONTAMINATION FISHERIES:</b></p> <p>If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20.</p> <p>If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Lowest Flow</th> <th>FCI Value</th> </tr> <tr> <td>&lt;10 cfs</td> <td>20</td> </tr> <tr> <td>10 to 100 cfs</td> <td>2</td> </tr> <tr> <td>&gt;100 cfs, coastal tidal waters, oceans, or Great Lakes</td> <td align="center">0</td> </tr> <tr> <td>3-mile mixing zone in quiet flowing river</td> <td>10</td> </tr> </table> <p align="right">FCI Value =</p>				Lowest Flow	FCI Value	<10 cfs	20	10 to 100 cfs	2	>100 cfs, coastal tidal waters, oceans, or Great Lakes	0	3-mile mixing zone in quiet flowing river	10	0		
Lowest Flow	FCI Value															
<10 cfs	20															
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>100 cfs, coastal tidal waters, oceans, or Great Lakes	0															
3-mile mixing zone in quiet flowing river	10															
<p><b>SUM OF TARGETS T =</b></p>			0													

## SURFACE WATER PATHWAY (continued) ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS	Score	Data Type	Rels																																																																													
<p>Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Environment Name</th> <th style="text-align: left;">Water Body Type</th> <th style="text-align: left;">Flow</th> </tr> </thead> <tbody> <tr> <td>Federal Endangered Species</td> <td>Tennessee River</td> <td>300-1000 cfs</td> </tr> <tr> <td>Federal Threatened Species</td> <td>Tennessee River</td> <td>300-1000 cfs</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Environment Name</th> <th style="text-align: left;">Environment Type and Value (SI Tables 13 &amp; 14)</th> <th style="text-align: left;">Multiplier (10 for Level I, 1 for Level II)</th> <th style="text-align: left;">Product</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td>x</td> <td>=</td> </tr> <tr> <td> </td> <td> </td> <td>x</td> <td>=</td> </tr> <tr> <td> </td> <td> </td> <td>x</td> <td>=</td> </tr> <tr> <td> </td> <td> </td> <td>x</td> <td>=</td> </tr> <tr> <td colspan="3" style="text-align: right;">Sum =</td> <td> </td> </tr> </tbody> </table> <p>10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Flow</th> <th style="text-align: left;">Dilution Weight (SI Table 12)</th> <th style="text-align: left;">Environment Type and Value (SI Tables 13 &amp; 14)</th> <th style="text-align: left;">Pot. Cont.</th> <th style="text-align: left;">Product</th> </tr> </thead> <tbody> <tr> <td>300-1000 cfs</td> <td>0.01</td> <td>Federal Endangered Species (Tennessee River) x</td> <td>7.5 0.1 =</td> <td>0.075</td> </tr> <tr> <td>100-300 cfs</td> <td>0.01</td> <td>Federal Threatened Species (Tennessee River) x</td> <td>7.5 0.1 =</td> <td>0.075</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td>x 0.1 =</td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td>x 0.1 =</td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td>x 0.1 =</td> <td> </td> </tr> <tr> <td colspan="4" style="text-align: right;">Sum =</td> <td> </td> </tr> </tbody> </table> <div style="text-align: right; margin-top: 10px;"> <p>T = 0.15</p> </div>	Environment Name	Water Body Type	Flow	Federal Endangered Species	Tennessee River	300-1000 cfs	Federal Threatened Species	Tennessee River	300-1000 cfs										Environment Name	Environment Type and Value (SI Tables 13 & 14)	Multiplier (10 for Level I, 1 for Level II)	Product			x	=			x	=			x	=			x	=	Sum =				Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product	300-1000 cfs	0.01	Federal Endangered Species (Tennessee River) x	7.5 0.1 =	0.075	100-300 cfs	0.01	Federal Threatened Species (Tennessee River) x	7.5 0.1 =	0.075				x 0.1 =					x 0.1 =					x 0.1 =		Sum =					0		
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SI TABLE 12 (HRS Table 4-13):  
SURFACE WATER DILUTION WEIGHTS

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	Flow Characteristics	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river	> 10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	<del>0.001</del> 0.0001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	<del>0.001</del> 0.0001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	<del>0.0001</del> 0.00001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

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SI TABLE 13 (HRS TABLE 4-23):  
SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands See SI Table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)	

x2

SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER  
WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

**SURFACE WATER PATHWAY (concluded)  
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY**

WASTE CHARACTERISTICS	Score																														
14. If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is greater.																															
15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.																															
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Substance Value</th> <th>HWQ</th> <th>Product</th> </tr> </thead> <tbody> <tr> <td>Drinking Water Threat Toxicity/Persistence</td> <td>10,000 x</td> <td>10</td> <td>1 x 10<sup>5</sup></td> </tr> <tr> <td>Food Chain Threat Toxicity/Persistence Bioaccumulation</td> <td>5 x 10<sup>8</sup> x</td> <td>10</td> <td>5 x 10<sup>9</sup></td> </tr> <tr> <td>Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation</td> <td>5 x 10<sup>8</sup> x</td> <td>10</td> <td>5 x 10<sup>9</sup></td> </tr> </tbody> </table>		Substance Value	HWQ	Product	Drinking Water Threat Toxicity/Persistence	10,000 x	10	1 x 10 <sup>5</sup>	Food Chain Threat Toxicity/Persistence Bioaccumulation	5 x 10 <sup>8</sup> x	10	5 x 10 <sup>9</sup>	Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	5 x 10 <sup>8</sup> x	10	5 x 10 <sup>9</sup>	<p><b>WC Score (from Table) (Maximum of 100)</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">8</td> <td style="text-align: right; font-size: small;">max = 100</td> </tr> <tr> <td style="text-align: center;">180</td> <td style="text-align: right; font-size: small;">max = 1000</td> </tr> <tr> <td style="text-align: center;">180</td> <td style="text-align: right; font-size: small;">max = 1000</td> </tr> </tbody> </table>	8	max = 100	180	max = 1000	180	max = 1000								
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<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Product</th> <th>WC Score</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>&gt;0 to &lt;10</td><td>1</td></tr> <tr><td>10 to &lt;100</td><td>2</td></tr> <tr><td>100 to &lt;1,000</td><td>3</td></tr> <tr><td>1,000 to &lt; 10,000</td><td>6</td></tr> <tr><td>10,000 to &lt;1E + 05</td><td>10</td></tr> <tr><td>1E + 05 to &lt;1E + 06</td><td>18</td></tr> <tr><td>1E + 06 to &lt;1E + 07</td><td>32</td></tr> <tr><td>1E + 07 to &lt;1E + 08</td><td>56</td></tr> <tr><td>1E + 08 to &lt;1E + 09</td><td>100</td></tr> <tr><td>1E + 09 to &lt;1E + 10</td><td>180</td></tr> <tr><td>1E + 10 to &lt;1E + 11</td><td>320</td></tr> <tr><td>1E + 11 to &lt;1E + 12</td><td>560</td></tr> <tr><td>1E + 12 or greater</td><td>1000</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to < 10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 to <1E + 09	100	1E + 09 to <1E + 10	180	1E + 10 to <1E + 11	320	1E + 11 to <1E + 12	560	1E + 12 or greater	1000	
Product	WC Score																														
0	0																														
>0 to <10	1																														
10 to <100	2																														
100 to <1,000	3																														
1,000 to < 10,000	6																														
10,000 to <1E + 05	10																														
1E + 05 to <1E + 06	18																														
1E + 06 to <1E + 07	32																														
1E + 07 to <1E + 08	56																														
1E + 08 to <1E + 09	100																														
1E + 09 to <1E + 10	180																														
1E + 10 to <1E + 11	320																														
1E + 11 to <1E + 12	560																														
1E + 12 or greater	1000																														

**SURFACE WATER PATHWAY THREAT SCORES**

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score $\frac{LR \times T \times WC}{82,500}$
Drinking Water	270	1	8	(maximum of 100) 0.26
Human Food Chain	270	0	180	(maximum of 100) 0
Environmental	270	0.15	180	(maximum of 60) 0.09

**SURFACE WATER PATHWAY SCORE  
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)**

(maximum of 100)

0.35

## SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., ground water plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

### Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 as necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Population \_\_\_\_\_

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

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# **SOIL EXPOSURE PATHWAY WORKSHEET RESIDENT POPULATION THREAT**

LIKELIHOOD OF EXPOSURE	Score	Data Type	Rel's
1. OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.	550		
LE =	550		

## **TARGETS**

<p>2. RESIDENT POPULATION: Determine the number of people living or attending school or day care on a property with an area of observed contamination and whose residence, school, or day care center, respectively, is on or within 200 feet of the area of observed contamination.</p> <p>Level I: _____ people x 10 = _____</p> <p>Level II: _____ people x 1 = _____</p> <p align="right">Sum =</p>	0												
<p>3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (i.e., no Level I or Level II targets), assign 0 (HRS Section 5.1.3).</p>	0												
<p>4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site.</p> <table border="1"> <thead> <tr> <th>Number of Workers</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td align="center">0</td> <td align="center">0</td> </tr> <tr> <td align="center">1 to 100</td> <td align="center">5</td> </tr> <tr> <td align="center">101 to 1,000</td> <td align="center">10</td> </tr> <tr> <td align="center">&gt;1,000</td> <td align="center">15</td> </tr> </tbody> </table>	Number of Workers	Score	0	0	1 to 100	5	101 to 1,000	10	>1,000	15	0		
Number of Workers	Score												
0	0												
1 to 100	5												
101 to 1,000	10												
>1,000	15												
<p>5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination.</p> <table border="1"> <thead> <tr> <th>Terrestrial Sensitive Environment Type</th> <th>Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> <p align="right">Sum =</p>	Terrestrial Sensitive Environment Type	Value									0		
Terrestrial Sensitive Environment Type	Value												
<p>6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies.</p> <ul style="list-style-type: none"> <li>• Commercial agriculture</li> <li>• Commercial silviculture</li> <li>• Commercial livestock production or commercial livestock grazing</li> </ul>	0												
Total of Targets T=	0												

SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY  
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

# **SOIL EXPOSURE PATHWAY WORKSHEET NEARBY POPULATION THREAT**

LIKELIHOOD OF EXPOSURE		Score	Data Type	Ref.
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value <u>10</u>			
Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value <u>20</u>			
Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)				

note: if there is no area of  
observed contamination,  
LE = 0.

LE =

5

TARGETS		Score	Data Type	Ref.
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.		1		
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (i.e., properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1.		11.5		

T =

12.5

**SI TABLE 17 (HRS TABLE 5-6):  
ATTRACTIVENESS/ACCESSIBILITY VALUES**

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements—for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

**SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES**

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100



Uy-AN

AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES  
FOR NEARBY POPULATION THREAT

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												Pop. Value
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,001	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	
Greater than 0 to $\frac{1}{4}$	58	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	1
Greater than $\frac{1}{4}$ to $\frac{1}{2}$	135	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	2
Greater than $\frac{1}{2}$ to 1	106	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	10
Reference(s) _____														Sum = 13

**Reference(s).**

Sum =

## SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

## WASTE CHARACTERISTICS


10.	Assign the hazardous waste quantity score calculated for soil exposure HRS Section 5-1.2.2 and HRS Table 5-2.	10
11.	Assign the highest toxicity value from SI Table 16 <u>3</u> or <u>for the soil exposure pathway</u>	10,000
12.	Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	WC = 18

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

RESIDENT POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 1:  
Targets = Sum of Questions 2, 3, 4, 5, 6)

(52) (0) (18)  
LEXIX WC  
82,500



NEARBY POPULATION THREAT SCORE:

(Likelihood of Exposure, Question 7;  
Targets = Sum of Questions 8, 9)

(5) (2.3) (16)  
LEXTXWC  
82,500

O. 100

SOIL EXPOSURE PATHWAY SCORE:

Resident Population Threat + Nearby Population Threat % 82,500 (Maximum of 100)

0. (Maximum of 100)

## AIR PATHWAY

### Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

SI TABLE 21: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Gaseous Particulate	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

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Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: \_\_\_\_\_ Level I \_\_\_\_\_ Level II \_\_\_\_\_ Distance from Sources (mi) \_\_\_\_\_ References \_\_\_\_\_

Hazardous Substance	Conc. ( $\mu\text{g}/\text{m}^3$ )	Toxicity/Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
Highest Toxicity/Mobility			Highest Percent		Sum of Percents		Sum of Percents	

## AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21.			
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).	* 500		
LR =		500	

### TARGETS

3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air.  a) Level I: _____ people x 10 = _____ b) Level II: _____ people x 1 = _____      Total = _____	0																												
4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22. Sum the values and multiply the sum by 0.1.	0																												
5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.	7																												
6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Sensitive Environment Type</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Wetland Acreage</th> <th style="text-align: center;">Value</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Sensitive Environment Type	Value													Wetland Acreage	Value											0		
Sensitive Environment Type	Value																												
Wetland Acreage	Value																												
7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.	0																												
8. RESOURCES: Assign a score of 5 if one or more air resources apply within 1/2 mile of a source; assign a 0 if none applies. <ul style="list-style-type: none"> <li>• Commercial agriculture</li> <li>• Commercial silviculture</li> <li>• Major or designated recreation area</li> </ul>	5																												

\* A score of 500 was assigned due to the lack of supporting sampling data.

T = 1887

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a source	0	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	
0 to $\frac{1}{4}$ mile		20	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	
$> \frac{1}{4}$ to $\frac{1}{2}$ mile		2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	
$> \frac{1}{2}$ to 1 mile	1	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	26
$> 1$ to 2 miles	2254	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,328	8
$> 2$ to 3 miles	5001	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	12
$> 3$ to 4 miles	928	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	0.7
Nearest Individual =		7													Sum = 260

#### References

\* Score = 20 if the Nearest Individual is within  $\frac{1}{8}$  mile of a source; score = 7 if the Nearest Individual is between  $\frac{1}{8}$  and  $\frac{1}{4}$  mile of a source.

SI TABLE 23 (HRS TABLE  
6-18): AIR PATHWAY  
VALUES FOR WETLAND  
AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND  
CALCULATIONS FOR AIR PATHWAY POTENTIAL  
CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and 20)	Product
On a Source	0.10	x	
		x	
0 to 1/4 mile	0.025	x	
		x	
		x	
1/4 to 1/2 mile	0.0054	x	
		x	
		x	
1/2 to 1 mile	0.0016	x	
		x	
		x	
1 to 2 miles	0.0005	x	
		x	
		x	
2 to 3 miles	0.00023	x	
		x	
		x	
3 to 4 miles	0.00014	x	
		x	
		x	
> 4 miles	0	x	
Total Environments Score =			

## AIR PATHWAY (concluded)

### WASTE CHARACTERISTICS

<p>9. If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration. <u>All sources must meet the minimum size requirement of 0.5 (HRS 6.1.2.1.2)</u></p>	<p>10</p>																						
<p>10. Assign the highest air toxicity/mobility value from SI Table 21.</p>	<p>10,000</p>																						
<p>11. Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px 5px;">Product</th> <th style="padding: 2px 5px;">WC Score</th> </tr> </thead> <tbody> <tr><td style="padding: 2px 5px;">0</td><td style="padding: 2px 5px;">0</td></tr> <tr><td style="padding: 2px 5px;">&gt;0 to &lt;10</td><td style="padding: 2px 5px;">1</td></tr> <tr><td style="padding: 2px 5px;">10 to &lt;100</td><td style="padding: 2px 5px;">2</td></tr> <tr><td style="padding: 2px 5px;">100 to &lt;1,000</td><td style="padding: 2px 5px;">3</td></tr> <tr><td style="padding: 2px 5px;">1,000 to &lt;10,000</td><td style="padding: 2px 5px;">6</td></tr> <tr><td style="padding: 2px 5px;">10,000 to &lt;1E + 05</td><td style="padding: 2px 5px;">10</td></tr> <tr><td style="padding: 2px 5px;">1E + 05 to &lt;1E + 06</td><td style="padding: 2px 5px;">18</td></tr> <tr><td style="padding: 2px 5px;">1E + 06 to &lt;1E + 07</td><td style="padding: 2px 5px;">32</td></tr> <tr><td style="padding: 2px 5px;">1E + 07 to &lt;1E + 08</td><td style="padding: 2px 5px;">56</td></tr> <tr><td style="padding: 2px 5px;">1E + 08 or greater</td><td style="padding: 2px 5px;">100</td></tr> </tbody> </table>	Product	WC Score	0	0	>0 to <10	1	10 to <100	2	100 to <1,000	3	1,000 to <10,000	6	10,000 to <1E + 05	10	1E + 05 to <1E + 06	18	1E + 06 to <1E + 07	32	1E + 07 to <1E + 08	56	1E + 08 or greater	100	<p>WC = 18</p>
Product	WC Score																						
0	0																						
>0 to <10	1																						
10 to <100	2																						
100 to <1,000	3																						
1,000 to <10,000	6																						
10,000 to <1E + 05	10																						
1E + 05 to <1E + 06	18																						
1E + 06 to <1E + 07	32																						
1E + 07 to <1E + 08	56																						
1E + 08 or greater	100																						

AIR PATHWAY SCORE:

$$\begin{array}{c}
 \text{(500)} \quad \text{(611)} \quad \text{(18)} \\
 \text{L.P.} \quad \text{F.M.} \quad \text{H.R.} \\
 \hline
 \text{LE} \times \text{T} \times \text{WC} \\
 \hline
 82,500
 \end{array}$$

<p>2.06</p> <p>(maximum of 100)</p>
-------------------------------------

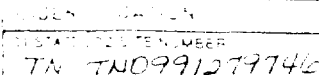


SITE SCORE CALCULATION		S	S <sup>2</sup>
GROUND WATER PATHWAY SCORE (S <sub>GW</sub> )		14.29	204.2
SURFACE WATER PATHWAY SCORE (S <sub>SW</sub> )		0.69	0.476
SOIL EXPOSURE (S <sub>S</sub> )		0.003	0.00009
AIR PATHWAY SCORE (S <sub>A</sub> )		2.06	4.24
SITE SCORE $\sqrt{\frac{S_{GW}^2 + S_{SW}^2 + S_S^2 + S_A^2}{4}} =$			7.23

#### COMMENTS

Due to low target values and a low overall site score, no further action is recommended at the site.

		<b>POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT</b> <b>PART 1 - SITE INFORMATION AND ASSESSMENT</b>				<b>I. IDENTIFICATION</b> 01 STATE 02 SITE NUMBER TN 105 02	
<b>II. SITE NAME AND LOCATION</b>							
01 SITE NAME (Legal, common, or descriptive name of site)				02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER			
03 CITY				04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE 08 CONG DIST
09 COORDINATES LATITUDE LONGITUDE				TN	37114		105 02
10 DIRECTIONS TO SITE (Starting from nearest public road)							
<b>III. RESPONSIBLE PARTIES</b>							
01 OWNER (if known)				02 STREET (Business, mailing, residential)			
03 CITY				04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER	
07 OPERATOR (if known and different from owner)				08 STREET (Business, mailing, residential)			
09 CITY				10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER	
13 TYPE OF OWNERSHIP (Check one): <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: <input type="checkbox"/> G. UNKNOWN							
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply): <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (CERCLA 102(c)) DATE RECEIVED <input type="checkbox"/> C. NONE							
<b>IV. CHARACTERIZATION OF POTENTIAL HAZARD</b>							
01 ON SITE INSPECTION <input type="checkbox"/> YES DATE <input type="checkbox"/> NO BY (Check all that apply): <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER:				02 SITE STATUS (Check one): <input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN			
03 YEARS OF OPERATION BEGINNING YEAR    ENDING YEAR <input type="checkbox"/> UNKNOWN							
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED							
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION							
<b>V. PRIORITY ASSESSMENT</b>							
01 PRIORITY FOR INSPECTION (Check one: If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents): <input type="checkbox"/> A. HIGH <input type="checkbox"/> B. MEDIUM <input type="checkbox"/> C. LOW <input type="checkbox"/> D. NONE (Inspection required promptly)    (Inspection required)    (Inspect on time available basis)    (No further action needed, complete current disposition form)							
<b>VI. INFORMATION AVAILABLE FROM</b>							
01 CONTACT		02 OF (Agency, Organization)			03 TELEPHONE NUMBER		
04 PERSON RESPONSIBLE FOR ASSESSMENT		05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE		



☐ I HIGHLY VOLATILE  
☐ II EXPLOSIVE  
☐ III REACTIVE  
☐ IV INCOMPATIBLE  
☐ V NOT APPLICABLE

## EPA FORM 2070-12 (7-81)



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

1. IDENTIFICATION

01 STATE 02 SITE NUMBER

PA 80094127746

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ B. SURFACE WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ C. CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ E. DIRECT CONTACT

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ F. CONTAMINATION OF SOIL

03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_

(Acres)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ G. DRINKING WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ H. WORKER EXPOSURE/INJURY

03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ I. POPULATION EXPOSURE/INJURY

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

7A. 1040-99, 279746

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION (include names of species)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
(Spills/runoff/standing liquids/leaking drums)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

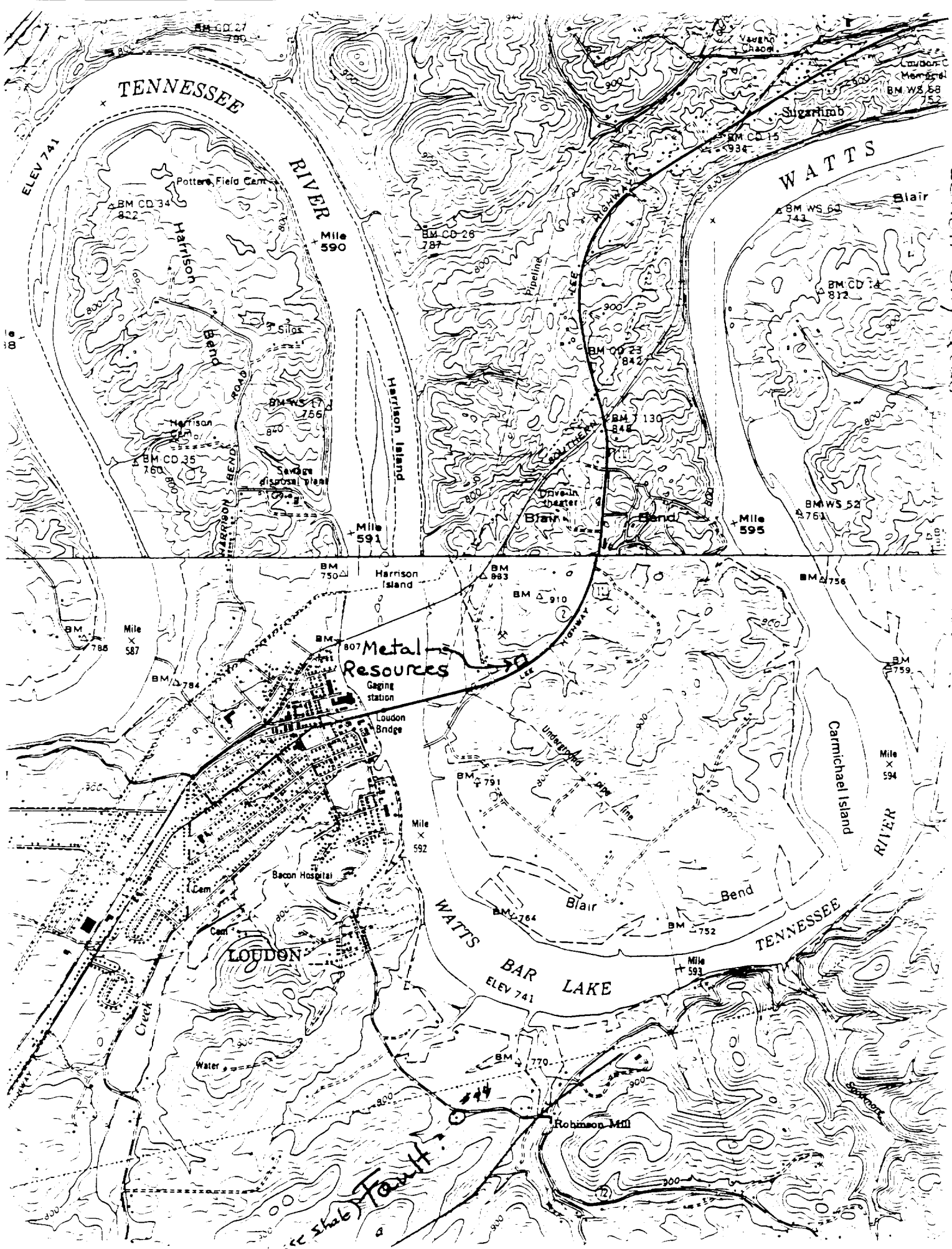
7

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state regs, sample analyses, reports)



## Metal Resources

- Talked to Marty Hertz
- Knoxville DSWM at site in August '83 - No hazardous waste on-site.

## - Directions

From Knoxville: I40-75 west

Take 75 south

Exit on Sugar Lem Road

Proceed East till road dead ends into U.S. 11

Head towards Loudon, go ~ 1 mile to small business area

Site is a white building (old car dealership)

Texaco across street

If you cross a bridge in the business area you've gone too far

Reference 2

1. Tennessee

Wurzel,

the inspection  
the visit





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 0991279746

II. SITE NAME AND LOCATION

01 SITE NAME (If not known, use name of site)  
Metal Resources, Incorporated  
02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER  
Blair Bend Industrial Park / U.S. 11  
03 CITY  
Loudon  
04 STATE 05 ZIP CODE 06 COUNTY 07 COUNTY CODE 08 CONG DIST  
TN 37774 Loudon 105 02  
09 COORDINATES  
LATITUDE 35 44 40.8 LONGITUDE 82 51 26.0  
10 TYPE OF OWNERSHIP (Check one)  
☒ A PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL  
☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION 02 SITE STATUS 03 YEARS OF OPERATION  
6/1/84 ☒ ACTIVE ☐ INACTIVE 1981 ☐ UNKNOWN  
MONTH DAY YEAR BEGINNING YEAR ENDING YEAR  
04 AGENCY PERFORMING INSPECTION (Check all that apply)  
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR  
☒ E. STATE ☐ F. STATE CONTRACTOR ☐ G. OTHER

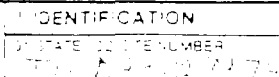
05 CHIEF INSPECTOR 06 TITLE 07 ORGANIZATION 08 TELEPHONE NO.  
Ken Davis Geologist I Tenn. Dept. Health + Environ. (615) 741-6287  
09 OTHER INSPECTORS 10 TITLE 11 ORGANIZATION 12 TELEPHONE NO.  
Karen Bonner Chemist I Tenn. Dept. Health + Environ. (615) 741-6287  
( ) ( )  
( ) ( )  
( ) ( )  
( ) ( )

13 SITE REPRESENTATIVES INTERVIEWED 14 TITLE 15 ADDRESS 16 TELEPHONE NO.  
Mr. Frank Smith Plant Supervisor Metal Resources (615) 458-2007  
Mr. Arthur Smith Shift Supervisor Metal Resources (615) 458-2007  
Mrs. Pat Hertzel Secretary Metal Resources (615) 458-2007  
( ) ( )  
( ) ( )  
( ) ( )

17 ACCESS GAINED BY (Check one) 18 TIME OF INSPECTION 19 WEATHER CONDITIONS  
☒ PERMISSION ☐ WARRANT 12:00 noon ~90°, Sunny, No Wind Present

IV. INFORMATION AVAILABLE FROM

01 CONTACT 02 OF (Agency Organization) 03 TELEPHONE NO.  
Mr. Marty Hertzel Metal Resources, Inc. (615) 458-2007  
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM 05 AGENCY 06 ORGANIZATION 07 TELEPHONE NO. 08 DATE  
Kenneth R. Davis Tenn. Dept. H. and E. D. S. W. M. (615) 741-6287 6/1/84  
MONTH DAY YEAR



01. PHYSICAL STATES (check all that apply)	02. WASTE QUANTITY AT SITE <i>Measures of waste quantities must be independent</i>	03. WASTE CHARACTERISTICS (check all that apply)
A. SOLID	TONS _____	A. TOXIC
B. POWDER/FINES	CUBIC YARDS _____	B. CORROSIVE
C. SLOUDGE	NO. OF DRUMS _____	C. RADIOACTIVE
D. OTHER _____		D. PERSISTENT
		E. SOLUBLE
		F. INFECTIOUS
		G. FLAMMABLE
		H. IGNITABLE
		I. HIGHLY VOLATILE
		J. EXPLOSIVE
		K. REACTIVE
		L. INCOMPATIBLE
		M. NOT APPLICABLE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCG	OTHER ORGANIC CHEMICALS			
ICG	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

[illegible]

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

1. IDENTIFICATION	
01 STATE	02 SITE NUMBER
03	04

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> D. FIRE EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED _____ ACRES: _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED _____	02 <input type="checkbox"/> OBSERVED (DATE _____) 04 NARRATIVE DESCRIPTION _____	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TA 09977774

II. HAZARDOUS CONDITIONS AND INCIDENTS *(continued)*

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION *(include names of species)*

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
*(Soils Runoff Standing pools Leaking drums)*

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ P. ILLEGAL UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis reports)*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION  
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
PA	15415741

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED <small>Check all that apply:</small>	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE <small>Specify:</small>				
<input type="checkbox"/> H. LOCAL <small>Specify:</small>				
<input type="checkbox"/> I. OTHER <small>Specify:</small>				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/ DISPOSAL <small>Check all that apply:</small>	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT <small>Check all that apply:</small>	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/ PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	06 AREA OF SITE
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/ RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER <small>Specify:</small>	
<input type="checkbox"/> I. OTHER <small>Specify:</small>				

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES <small>Check all that apply:</small>
<input type="checkbox"/> A. ADEQUATE, SECURE <input type="checkbox"/> B. MODERATE <input type="checkbox"/> C. INADEQUATE, POOR <input type="checkbox"/> D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE <input type="checkbox"/> YES <input type="checkbox"/> NO
02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis reports)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

1. IDENTIFICATION  
STATE AND SITE NUMBER  
TN 091170

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (check one)

☐ A  $10^{-9}$  -  $10^{-8}$  cm/sec ☐ B  $10^{-8}$  -  $10^{-7}$  cm/sec ☐ C  $10^{-7}$  -  $10^{-6}$  cm/sec ☐ D GREATER THAN  $10^{-6}$  cm/sec

02 PERMEABILITY OF BEDROCK (check one)

☐ A IMPERMEABLE ☐ B RELATIVELY IMPERMEABLE ☐ C RELATIVELY PERMEABLE ☐ D VERY PERMEABLE  
Less than  $10^{-9}$  cm/sec  $10^{-9}$  -  $10^{-8}$  cm/sec  $10^{-8}$  -  $10^{-7}$  cm/sec Greater than  $10^{-7}$  cm/sec

03 DEPTH TO BEDROCK

\_\_\_\_\_ (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

\_\_\_\_\_ (ft)

05 SOIL pH

\_\_\_\_\_

06 NET PRECIPITATION

\_\_\_\_\_ (in)

07 ONE YEAR 24-HOUR RAINFALL

\_\_\_\_\_ (in)

08 SLOPE

SITE SLOPE

\_\_\_\_\_ %

DIRECTION OF SITE SLOPE

TERRAIN AVERAGE SLOPE

\_\_\_\_\_ %

09 FLOOD POTENTIAL

SITE IS IN \_\_\_\_\_ YEAR FLOODPLAIN

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

A \_\_\_\_\_ (mi)

B \_\_\_\_\_ (mi)

12 DISTANCE TO CRITICAL HABITAT (or endangered species)

\_\_\_\_\_ (mi)

ENDANGERED SPECIES \_\_\_\_\_

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL

A \_\_\_\_\_ (mi)

RESIDENTIAL AREAS, NATIONAL STATE PARKS,  
FORESTS, OR WILDLIFE RESERVES

B \_\_\_\_\_ (mi)

AGRICULTURAL LANDS  
PRIME AG LAND AG LAND

C \_\_\_\_\_ (mi) D \_\_\_\_\_ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION (cite specific references, e.g., State files, sample analysis, reports)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION  
01 STATE 02 SITE NUMBER  
TX 030127470

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY <small>Check as applicable:</small>			02 STATUS			03 DISTANCE TO SITE	
	SURFACE	WELL	ENDANGERED	AFFECTED	MONITORED		
COMMUNITY	A <input type="checkbox"/>	B <input type="checkbox"/>	A <input type="checkbox"/>	B <input type="checkbox"/>	C <input type="checkbox"/>	A _____ (mi)	
NON-COMMUNITY	C <input type="checkbox"/>	D <input type="checkbox"/>	D <input type="checkbox"/>	E <input type="checkbox"/>	F <input type="checkbox"/>	B _____ (mi)	

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY Check one:

☐ A ONLY SOURCE FOR DRINKING    ☐ B DRINKING Other sources available:    ☐ C COMMERCIAL/INDUSTRIAL IRRIGATION Limited other sources available:    ☐ D NOT USED/UNUSEABLE

COMMERCIAL/INDUSTRIAL IRRIGATION  
No other water sources available:

02 POPULATION SERVED BY GROUNDWATER _____		03 DISTANCE TO NEAREST DRINKING WATER WELL _____ (mi)		
04 DEPTH TO GROUNDWATER _____ (ft)	05 DIRECTION OF GROUNDWATER FLOW _____	06 DEPTH TO AQUIFER OF CONCERN _____ (ft)	07 POTENTIAL YIELD OF AQUIFER _____ (gpd)	08 SOLE SOURCE AQUIFER <input type="checkbox"/> YES <input type="checkbox"/> NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

10 RECHARGE AREA <input type="checkbox"/> YES <input type="checkbox"/> NO		COMMENTS	11 DISCHARGE AREA <input type="checkbox"/> YES <input type="checkbox"/> NO		COMMENTS
------------------------------------------------------------------------------	--	----------	-------------------------------------------------------------------------------	--	----------

IV. SURFACE WATER

01 SURFACE WATER USE Check one:

☐ A RESERVOIR/RECREATION/DRINKING WATER SOURCE    ☐ B IRRIGATION/ECONOMICALLY IMPORTANT RESOURCES    ☐ C COMMERCIAL/INDUSTRIAL    ☐ D NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

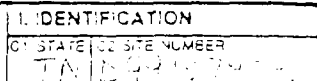
NAME	AFFECTED	DISTANCE TO SITE
_____	<input type="checkbox"/>	_____ (mi)
_____	<input type="checkbox"/>	_____ (mi)
_____	<input type="checkbox"/>	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN			02 DISTANCE TO NEAREST POPULATION _____ (mi)
ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE	
A. _____ NO. OF PERSONS	B. _____ NO. OF PERSONS	C. _____ NO. OF PERSONS	

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____	04 DISTANCE TO NEAREST OFF-SITE BUILDING _____ (mi)
--------------------------------------------------------------	--------------------------------------------------------

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., urban, village, densely populated urban area)



SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

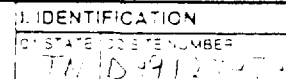
01 TYPE	02 COMMENTS

01 TYPE <input type="checkbox"/> GROUND <input type="checkbox"/> AERIAL		02 IN CUSTODY OF _____ <i>Name of organization or individual</i>
03 MAPS <input type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS _____	

---

---





II. CURRENT OWNER(S)				PARENT COMPANY (if applicable)			
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
01 NAME		02 D+B NUMBER		08 NAME		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD, etc.)		11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		12 CITY	13 STATE	14 ZIP CODE	
III. PREVIOUS OWNER(S) (if most recent first)				IV. REALTY OWNER(S) (if applicable; if most recent first)			
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER		01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE		05 CITY	06 STATE	07 ZIP CODE	

## V. SOURCES OF INFORMATION (Cite specific references, e.g., slide files, sample analysis, reports)



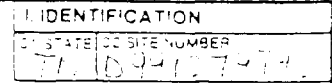
POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

II. CURRENT OPERATOR (Provide information from owner)										OPERATOR'S PARENT COMPANY (If applicable)									
01 NAME					02 D+B NUMBER					03 NAME					04 D+B NUMBER				
05 STREET ADDRESS (P.O. Box, RFD, etc.)					06 SIC CODE					07 STREET ADDRESS (P.O. Box, RFD, etc.)					08 SIC CODE				
09 CITY					10 STATE 11 ZIP CODE					12 CITY					13 STATE 14 ZIP CODE				
15 YEARS OF OPERATION					16 NAME OF OWNER														
III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)										PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)									
01 NAME					02 D+B NUMBER					03 NAME					04 D+B NUMBER				
05 STREET ADDRESS (P.O. Box, RFD, etc.)					06 SIC CODE					07 STREET ADDRESS (P.O. Box, RFD, etc.)					08 SIC CODE				
09 CITY					10 STATE 11 ZIP CODE					12 CITY					13 STATE 14 ZIP CODE				
15 YEARS OF OPERATION					16 NAME OF OWNER DURING THIS PERIOD														
01 NAME					02 D+B NUMBER					03 NAME					04 D+B NUMBER				
05 STREET ADDRESS (P.O. Box, RFD, etc.)					06 SIC CODE					07 STREET ADDRESS (P.O. Box, RFD, etc.)					08 SIC CODE				
09 CITY					10 STATE 11 ZIP CODE					12 CITY					13 STATE 14 ZIP CODE				
15 YEARS OF OPERATION					16 NAME OF OWNER DURING THIS PERIOD														
01 NAME					02 D+B NUMBER					03 NAME					04 D+B NUMBER				
05 STREET ADDRESS (P.O. Box, RFD, etc.)					06 SIC CODE					07 STREET ADDRESS (P.O. Box, RFD, etc.)					08 SIC CODE				
09 CITY					10 STATE 11 ZIP CODE					12 CITY					13 STATE 14 ZIP CODE				
15 YEARS OF OPERATION					16 NAME OF OWNER DURING THIS PERIOD														
IV. SOURCES OF INFORMATION (Give specific references, e.g., state files, sample analysis, reports)																			

EPA FORM 2070-13 (7-81)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE: 02 SITE NUMBER:  
TN 144274

II. PAST RESPONSE ACTIVITIES

01 <input type="checkbox"/> A. WATER SUPPLY CLOSED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> B. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> C. PERMANENT WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> D. SPILLED MATERIAL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> E. CONTAMINATED SOIL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> F. WASTE REPACKAGED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> H. ON SITE BURIAL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> I. IN SITU CHEMICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> J. IN SITU BIOLOGICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> L. ENCAPSULATION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> N. CUTOFF WALLS 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> O. EMERGENCY DIKING/SURFACE WATER DIVERSION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> Q. SUBSURFACE CUTOFF WALL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 00015797

II. PAST RESPONSE ACTIVITIES *(continued)*

01 <input type="checkbox"/> R. BARRIER WALLS CONSTRUCTED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> S. CAPPING/COVERING 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> T. BULK TANKAGE REPAIRED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> U. GROUT CURTAIN CONSTRUCTED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> V. BOTTOM SEALED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> W. GAS CONTROL 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> X. FIRE CONTROL 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> Y. LEACHATE TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> Z. AREA EVACUATED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> 1. ACCESS TO SITE RESTRICTED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> 2. POPULATION RELOCATED 04 DESCRIPTION	02 DATE	03 AGENCY
01 <input type="checkbox"/> 3. OTHER REMEDIAL ACTIVITIES 04 DESCRIPTION	02 DATE	03 AGENCY

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

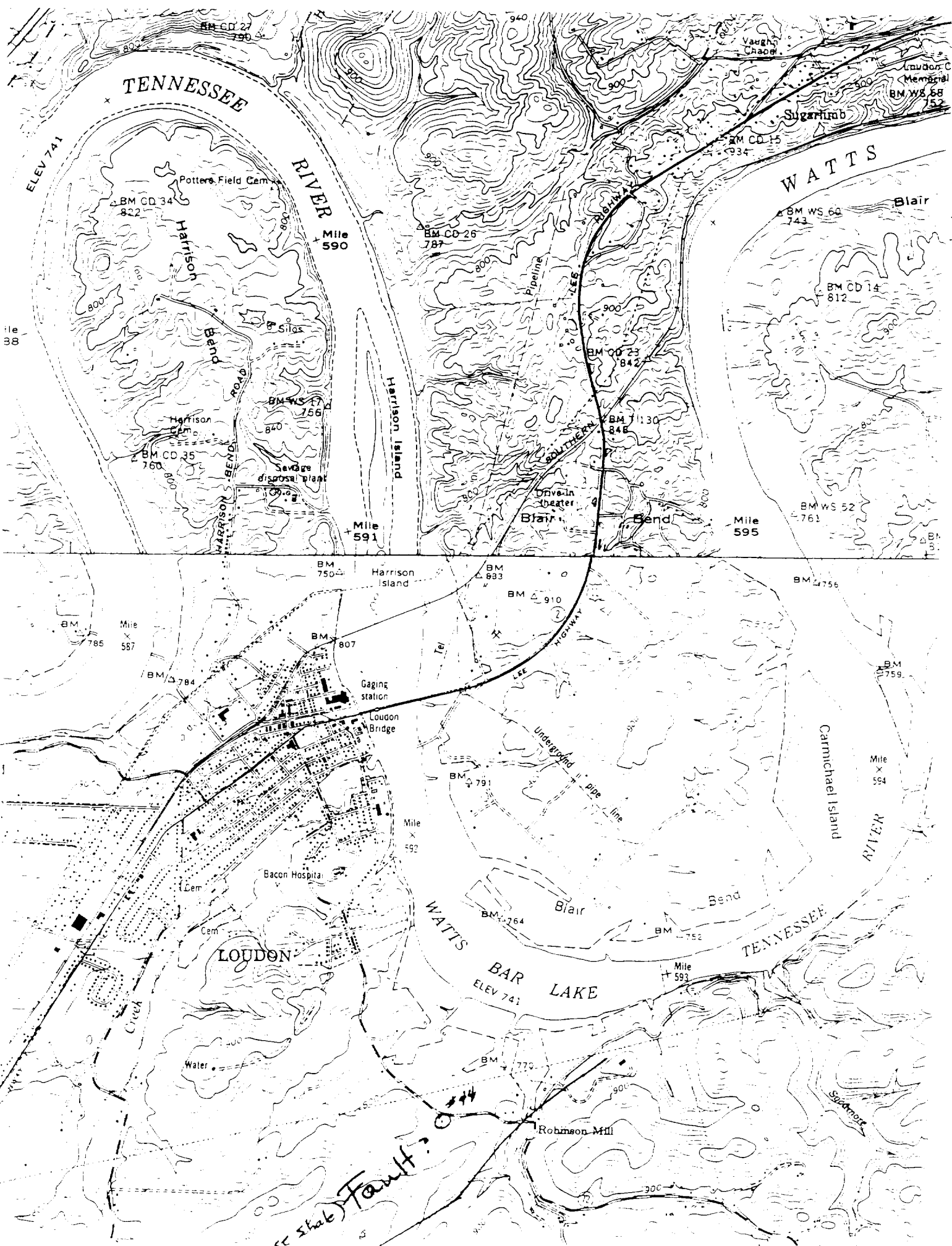
TX 1594127274

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☐ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)



Reference 3

C-586-2-0-222

March 1, 1990

Mr. A. R. Hanke  
Site Investigation and Support Branch  
Waste Management Division  
Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365

Date: \_\_\_\_\_  
Site Disposition: \_\_\_\_\_  
EPA Project Manager: \_\_\_\_\_

Subject: Screening Site Inspection, Phase I  
Metal Resources, Inc.  
Loudon, Loudon County, Georgia  
EPA ID No. TND991279746  
TDD No. F4-9001-171

Dear Mr. Hanke:

FIT 4 conducted a Phase I Screening Site Inspection of Metal Resources, Inc. in Loudon, Loudon County, Tennessee. This inspection included a review of state and EPA file material, a target survey, and an offsite reconnaissance of the property and surrounding areas.

Metal Resources, Inc. is located on Tennessee Highway 2 North in Loudon, Tennessee (Ref. 1). The facility began operations in 1981 and refines scrap aluminum (Ref. 2). The facility filed a RCRA part A application in 1981 and withdrew it in 1982 (Ref. 2).

Metal Resources, Inc. is located in the Valley and Ridge Physiographic Province north of Loudon, Loudon County, Tennessee (Ref. 3 p. 5). In this region the topography is shaped by broad thrust-fault hills trending northeast-southwest (Ref. 1). These direct surface water into a general northeast-southwest orientation. The Tennessee River bisects this target area from east to west, but \_\_\_\_\_ northward, or southward in response to differentially eroded thrust-related ridges (Ref. 1). The



climate is mild, and it has an annual rainfall of 12 inches with a 1-year, 24-hour rainfall of 3.0 inches (Ref. 4, p. 5; 5 p. 43, 63; 6 p. 93).

In this region groundwater is obtained from a regolith and fractured bedrock aquifer system. Beneath the study area the bedrock consists of dolomite Cambrian and Ordovician forms twins (Ref. 3, pp. 36-41). These types of aquifers commonly are not productive greater than 350 feet below land surface. Production is dependent on the presence of fractures, and it is estimated that wells can achieve 100 gallons per minute (Ref. pp. 40, 41). The aquifer beneath the facility is made up of fractured and solution dissolved portions of the dolomitic Newala Formation and its overlying sedimentary regolith. The residual clay sediments of the Newala Formation represent the layer of lowest hydraulic conductivity between the cambrian aquifer and the surface. Sediments of this kind have been shown to have a hydraulic conductivity in the  $1 \times 10^{-7}$  to  $1 \times 10^{-9}$  cm/second (Ref. , p. 29). Groundwater would be expected to be present at a depth of 80 to 85 feet below land surface. (Ref. ).

Four municipal water systems (Loudon City utilities, Piney Utility District, the Dixie Lee Utility Water System and the LeNoir City Water System) are the primary suppliers of water to areas within 4 miles of the site. The Loudon City Utilities obtain its water from a surface intake on Watts Bar Lake, which is formed by the Tennessee river (Ref. 1). The intake is approximately 4,600 feet upstream from the Metal Resources facility (Ref. 1). A small spring, 3.5 miles southwest of the dump, is also used as a municipal water source; however, the Tennessee River acts as a barrier to surface, or groundwater migration (Ref. 1). The area of coverage includes the town of Loudon, an area to the west of the city south of the Tennessee River, and an area to the east of Loudon, north of the River. The system serves 2,500 connections or 9,500 persons (Refs. 1,).

The Piney Utility District obtains its water from a spring 2 miles south of the site. the spring is located on Clear Branch Road near Robinson Mill Road. Piney Utility also can purchase water from the Loudon City Utilities as a back up. the Tennessee River would act as a barrier to surface, or

groundwater migration from the facility site. this water system supplies water to 820 connections and has an area of coverage southeast of the city of Loudon (Refs. 1, ).

The Dixie Lee Utility System supplies municipal water to a small area north of the city of Loudon and has three different sources of water, from a spring four miles north of the facility, a surface water intakes on Ft. Loudon Lake and from LeNoir City Utility, which also obtains water from Ft. Loudon Lake. However, none of these water sources would be influenced by conditions due to distance from the study area (Refs. 1,)

The LeNoir City Utility System supplies municipal water to the northeastern portion of the study area. The LeNoir City Utility receives water from intakes on Ft. Loudon Lake intakes are upstream and beyond the 4-mile radius of the study area (Ref).

A map showing the extent of the municipal water distribution lines within the 4-mile radius is enclosed (Ref. 1). A house count taken from the appropriats topographic maps indicates that \_\_\_\_ homes or \_\_\_\_ persons are not served by the municipal systems in a 3-mile radius from the site. If a 4-mile radius is considered, there are \_\_\_\_ additional homes or \_\_\_\_ additional persons using groundwater. The closest private well to the site would be \_\_\_\_ feet to the \_\_\_\_ (Ref. 1).

The Metal Resources, Inc. facility is located on the side of a hill. Surface water would drain to the north.

Site conditions would not influence any surface water intakes used for municipal water supplies. The closest downstream surface water intakes are at Kingston and Rockwood. Both of these are more than 15 stream miles in distance form the site. The Tennessee River is used recreationally for fishing, swimming and boating (Refs.).

Land use within the 4-mile radius of the facility would include single-family residential housing, which is adjacent to the property and commercial/industrial/institutional use in the of Loudon and LeNoir City. Outside the two city limits, land is rural in nature (Ref. 1), with the closest residence being within \_\_\_\_ feet (Ref. ). The population within 1 mile is estimated to be \_\_\_\_ persons and within 4 miles is \_\_\_\_ persons (Ref. ). the number of workers at the facility is not known.

Endangered species and sensitive habitats are listed as being in Loudon County. The slackwater darter (Etheostoma boschungii) and the snail darter (Percuna tanasi) are classified as threatened in Loudon County. In addition, the white warty-back psarly mussel (Plethobasus cicatricoccus) is listed as endangered in the Tennessee River (Ref. ).

Based on the results of this evaluation and the attached reference material, FIT 4 recommends that no further remedial action be planned for the Metal Resources, Inc., facility. Please contact me at NUS Corporation if you have any questions about this site.

Very truly yours,

Approved:

Clifford Leonard, Jr.  
Project Manager

\_\_\_\_\_

CL/ma

Enclosures

CC: Kelly Cain



**BLACK & VEATCH Waste Science, Inc.  
Project 52012.523**

**Logbook for Documentation of Site Visit  
February 5 - 7, 1995**

**Metal Resources, Inc.  
Loudon, Loudon County, Tennessee  
EPA ID No. TND991279746**

**Recorded by:**

**Jon Erskine, Site Geologist**

Louden County Util Dist: (615) 986-6591

- Lenoir City Dump (527)
- Metal Resources (523)

Bradley Denton x125

200 Depo St., Lenoir City  
Directly Behind 1st National Bank

8-5 M-F

Ask for him on the radio if not there

2700 people

Anderson County Utility Board  
Eddy Trexell (615) 457-3033

101 S. MAIN Suite 327

CLINTON, TN 37716

8-4 M-F

Lexington

PAUL Threadgill

901 968-5213

MSR Elec + Water Dept

7-5

54 Monroe St

Courthouse → behind 1st Nat Bank

6750 customers / 22-29,000

Dixie Lee Utilities  
615 986-2025

Spring 600,000 gallons  
LCUB 200,000  
1st UD 300,000

- Lenoir City Landfill  
- MCTA Resources

3,000 <sup>Meters</sup> customers

B. H. Cosick, Commissioner

Piney Util. Dist. 604 58-4411

BE Presley 458-2725

Rita Spring 1,130 - 2470.2

~~Lenoir~~ Loudon

440

Lenoir City Water System (615) 458-2091

Tenn River

201 ALMA Pl.  
Loudon

Jon Davis  
8-4:30

2.47, | 2,300 con → 584.2

Surfaces 90

Spring 10  $\frac{3}{4}$

Can be mixed

44 584.2

91

200

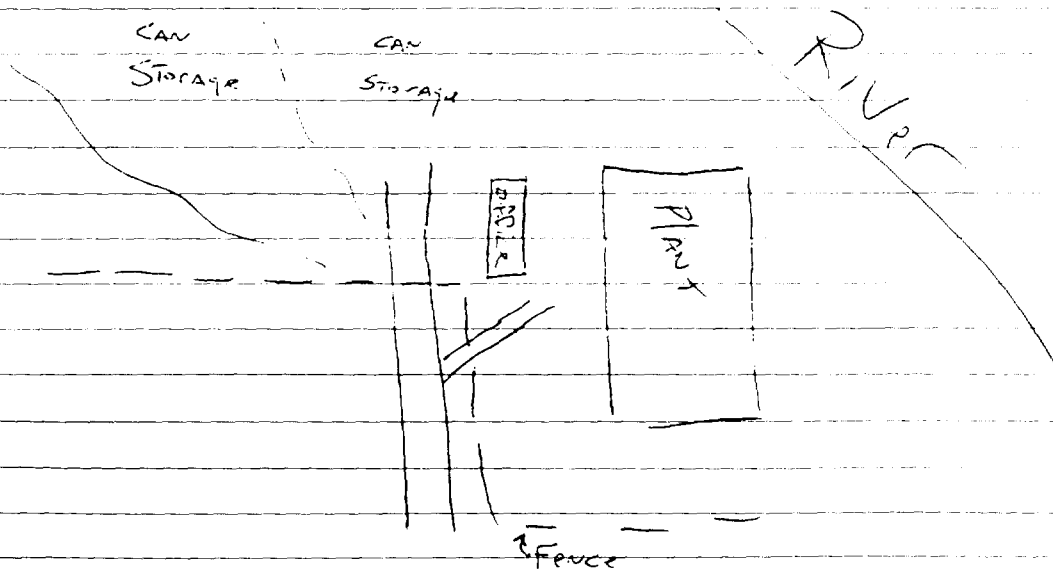
# Metal Resources

J. Enz 2/5/95

5

1400 Arrive at site. Site is no longer on Highway 11 as before. Site is now south of town at the end of Cecil B Webb drive in an industrial park by the Tennessee River. Site is active and divided into two parts, each surrounded by a barb wire fence. One half of the site houses a processing plant and offices, while the other half is for storing aluminum scrap (recycled cans). Scrap alum. is pressed into large rectangles. It is hard to see the site from the road due to hills and vegetation. Surface water run-off appears to flow straight to river. No special drainage controls are noticeable. There are probably <sup>the</sup> about 100 workers on site (max).

Site sketch from road



## Metal Resources

15.30 Inspecting old Metal Resources site @ Hwy 11. There are not signs of the old facility either. The site is currently an open grassy field. I tried to follow where overland flow would proceed from the site. No sewer channels were evident. It looks like runoff from the site would follow topographic contours west to the Tennessee River. ~~The site~~ To the north and east of the site are hills which would confine drainage. Drainage flows to flat area on the banks of the TN River. The area is ~~now~~ located in an industrial area. It is not clear how nearby factories effect the location of the PPE.



2/7/95 Loudon County Ut. Dist.

9

10:00 Bradley Denton, Water Department Manager,  
showed me water line maps for LCUD. He  
helped me transfer the water line info onto USGS  
maps. He showed me the correct surface water  
intake location, and delineated service areas by  
street. He said that LCUD provides water to 2,700  
people entirely from one surface water intake.  
No groundwater is utilized.

Phone (615) 986-6591

# Dixie Lee Utilities 2/7/95

11:30 Bill Cusick, Dixie Lee Water Commissioner, showed me water service areas for Dixie Lee Utilities on USGS maps. He located the Dixie Lee Springs and said that Dixie Lee pumps approx 600,000 gallons a day from the spring, and purchases 200,000 gallons a day from the Loudon County Util. Dist, ~~and~~ and an additional 300,000 gallons a day from the First Util. Dist. Dixie Lee provides service to 3,000 hook-ups. The source of First Util. Dist. water is not located within the 15 mile TDL or within 4 miles of the site.

Phone: (615) 986-2025

## Loudon City Water System

13:00

201 Alma Pl., Loudon, TN

John Davis reported that LCWS serves approx 2,300 connections. Mr. Davis delineated service areas on a USGS topo map. He identified surface LCWS' surface water intake and spring. Approx 90% of their water comes from the surface water intake, and 10% from the spring.

Phone: (615) 458-2091

Mr Davis believes that the spring draws water from the surficial Aquifer (regolith?)

# Piney UT. / Dist.

15

14:00

BE Presley, manager, delineated service areas on a USGS map. Mr Presley identified the spring where all of Piney's water is drawn from. Piney provides water to 1,130 connections.

Phone (615) 458-4411

Spring located  $1\frac{3}{4}$  miles south of Sitt



**BLACK & VEATCH Waste Science, Inc.**

2300 Clayton Road  
Suite 1280  
Concord, California 94520-2100

Reference 5

**OVERSIZED**

**DOCUMENT**

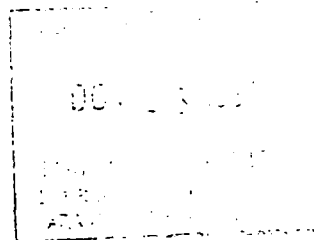
Reference 6

1990 CPH-1-44

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1990 Census of  
Population and Housing  
Summary Population and  
Housing Characteristics  
**Tennessee**

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Issued August 1991



U.S. Department of Commerce  
Robert A. Mosbacher, Secretary  
Rockwell A. Schnabel, Deputy Secretary

Economics and Statistics Administration  
Michael R. Darby, Under Secretary  
for Economic Affairs and Administrator

BUREAU OF THE CENSUS  
Barbara Everitt Bryant, Director

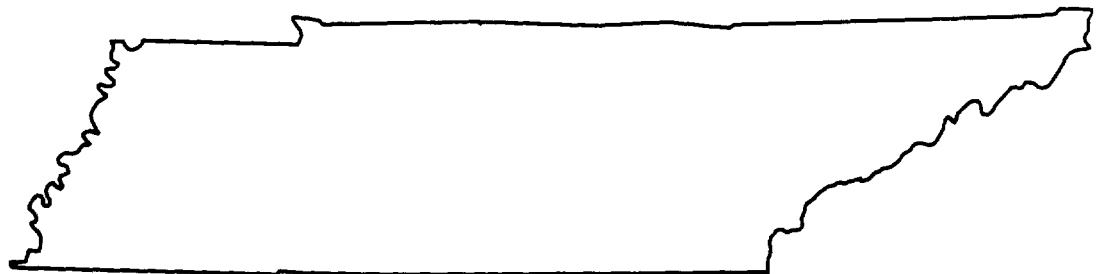
County Division	Family households					Nonfamily households				Persons per —		Persons in group quarters		
	Persons in households	All households	Total	Married-couple family	Female householder, no husband present	Total	Householder living alone		Household	Family	Total	Institutionalized persons	Other persons in group quarters	
							Total	65 years and over						
														Total
State	4 748 056	1 853 725	1 348 019	1 059 569	232 699	505 706	442 129	178 077	143 105	2.54	3.05	129 129	65 389	63 740
Adams County	67 595	27 384	19 846	16 181	2 958	7 538	6 911	3 117	2 547	2.47	2.96	655	578	77
Anderson County	30 031	11 608	8 768	7 087	1 289	2 840	2 536	1 017	801	2.59	3.01	380	343	37
Andrew County	14 255	5 784	4 333	3 732	465	1 451	1 349	751	603	2.46	2.90	269	278	41
Ashe County	8 608	3 261	2 522	2 104	300	739	670	320	240	2.54	3.06	1 061	651	0
Avery County	84 463	33 624	25 344	21 284	3 237	8 280	7 400	3 267	2 661	2.51	2.94	1 506	1 044	462
Baker County	72 043	27 604	21 157	17 518	2 841	6 447	5 714	2 277	1 826	2.61	3.02	1 669	539	1 130
Baldwin County	34 783	13 150	10 158	8 036	1 702	2 992	2 789	1 496	1 192	2.65	3.07	296	285	11
Barnes County	10 356	3 980	3 035	2 574	351	945	872	470	375	2.60	3.03	111	111	—
Barrow County	26 860	10 727	8 013	6 612	1 092	2 714	2 531	1 435	1 148	2.50	2.95	654	388	266
Bascom County	50 225	20 189	14 979	12 283	2 114	5 210	4 779	2 314	1 839	2.49	2.94	1 280	749	531
Bates County	26 840	9 515	7 748	6 679	776	1 767	1 524	587	436	2.82	3.15	300	180	120
Baxter County	11 791	4 558	3 505	2 933	446	1 053	963	514	422	2.59	3.01	1 028	187	841
Bay County	25 533	9 629	7 579	6 266	1 007	2 050	1 910	935	772	2.65	3.05	604	210	394
Beaumont County	7 158	2 855	2 144	1 748	301	711	649	318	214	2.51	2.93	80	71	9
Belmont County	28 840	11 191	8 483	6 551	1 500	2 708	2 470	1 138	882	2.58	3.00	301	270	31
Benton County	39 855	15 500	11 727	9 693	1 556	3 773	3 431	1 588	1 264	2.57	3.01	484	452	32
Berkeley County	13 103	5 183	3 856	3 141	567	1 327	1 257	766	623	2.53	3.00	275	275	—
Bethesda County	34 207	13 426	10 451	8 842	1 265	2 975	2 688	1 299	1 026	2.55	2.92	529	529	—
Bethesda County	489 689	207 530	131 395	95 592	29 555	76 135	62 830	18 268	14 969	2.26	2.77	21 095	10 317	10 778
Bethesda County	10 320	4 216	3 109	2 602	391	1 107	1 032	607	461	2.45	2.91	142	142	—
Bethesda County	14 237	5 696	4 316	3 574	584	1 380	1 293	692	563	2.50	2.93	122	106	17
Bethesda County	34 532	13 019	10 099	8 188	1 510	2 920	2 648	1 285	1 007	2.65	3.06	599	589	10
Bethesda County	34 343	13 617	9 923	7 869	1 543	3 694	3 360	1 773	1 435	2.52	3.01	511	474	37
Bethesda County	25 110	8 453	6 717	5 038	1 334	1 736	1 576	765	556	2.97	3.40	449	436	13
Bethesda County	14 559	5 511	4 258	3 415	665	1 252	1 165	585	439	2.64	3.07	110	110	—
Bethesda County	33 429	12 660	9 883	8 412	1 135	2 777	2 530	1 312	1 061	2.64	3.04	1 296	314	982
Bethesda County	45 568	18 361	13 472	10 708	2 248	4 889	4 573	2 560	2 114	2.48	2.96	747	644	103
Bethesda County	25 336	9 832	7 454	6 038	1 116	2 378	2 218	1 166	891	2.58	3.02	405	205	200
Bethesda County	16 912	6 394	5 076	4 281	591	1 318	1 217	590	459	2.64	3.02	183	146	37
Bethesda County	54 175	21 482	16 280	13 290	2 295	5 202	4 747	2 120	1 687	2.52	2.94	1 678	727	951
Bethesda County	13 157	4 784	3 743	3 048	534	1 041	976	522	412	2.75	3.18	205	193	12
Bethesda County	49 750	19 429	14 795	11 895	2 314	4 634	4 138	1 629	1 313	2.56	2.97	730	525	205
Bethesda County	279 044	111 799	78 964	60 790	15 042	32 835	29 025	11 581	9 488	2.50	3.02	6 492	3 622	2 870
Bethesda County	6 571	2 484	1 924	1 505	327	560	532	269	212	2.65	3.07	168	168	—
Bethesda County	22 589	8 276	6 190	4 534	1 356	2 086	1 887	968	751	2.72	3.22	788	770	18
Bethesda County	22 350	8 726	6 633	5 490	382	2 093	1 940	978	764	2.56	3.00	283	263	20
Bethesda County	44 232	17 167	12 223	10 100	1 124	3 944	3 639	1 671	1 334	2.58	2.99	332	299	34
Bethesda County	19 240	7 074	5 150	3 566	1 320	1 864	1 708	905	703	2.74	3.29	197	59	138
Bethesda County	21 630	8 527	6 466	5 393	820	2 061	1 922	975	765	2.54	2.97	214	212	2
Bethesda County	27 456	11 362	8 216	6 743	1 126	3 146	2 902	1 619	1 282	2.42	2.89	432	388	44
Bethesda County	15 715	5 976	4 608	3 882	526	1 368	1 229	619	505	2.63	3.04	1 039	1 039	—
Bethesda County	6 842	2 683	2 039	1 705	261	644	604	335	248	2.55	2.98	176	163	13
Bethesda County	15 551	6 063	4 593	3 564	561	1 470	1 373	665	514	2.56	3.01	244	110	134
Bethesda County	9 176	3 642	2 782	2 303	334	860	806	475	358	2.52	2.94	121	119	2
Bethesda County	31 415	12 329	9 510	8 018	1 144	2 819	2 530	1 192	940	2.55	2.94	1 601	445	1 156
Bethesda County	13 609	5 406	4 081	3 260	599	1 325	1 230	618	464	2.52	2.95	157	145	12
Bethesda County	323 400	133 639	90 561	71 679	15 478	43 078	36 661	12 962	10 642	2.42	2.97	12 349	3 288	9 061
Bethesda County	6 057	2 418	1 735	1 328	322	683	625	343	252	2.50	3.00	1 072	651	—
Bethesda County	22 598	8 423	6 351	4 846	1 259	2 072	1 898	1 059	842	2.68	3.15	891	384	507
Bethesda County	34 992	13 338	10 265	8 665	1 291	3 073	2 884	1 596	1 317	2.52	3.06	312	302	9
Bethesda County	9 098	3 533	2 606	2 129	328	927	859	451	353	2.58	3.06	149	136	13
Bethesda County	27 910	10 881	8 220	6 312	1 097	2 651	2 455	1 376	1 090	2.57	3.01	247	229	3
Bethesda County	30 926	12 155	9 289	7 587	1 201	2 866	2 635	1 237	1 005	2.54	2.96	329	329	—
Bethesda County	41 710	16 351	12 458	10 275	1 751	3 893	3 600	1 755	1 425	2.58	2.98	672	466	207
Bethesda County	22 180	8 834	6 678	5 592	824	2 156	2 014	1 073	863	2.51	2.95	242	242	—
Bethesda County	15 817	6 159	4 711	4 027	522	1 448	1 356	707	577	2.57	3.00	89	89	—
Bethesda County	75 515	29 609	21 301	15 750	4 504	8 308	7 397	3 206	2 554	2.55	3.06	2 467	845	1 622
Bethesda County	24 645	9 215	7 171	5 838	1 032	2 044	1 873	963	761	2.57	3.08	215	205	10
Bethesda County	21 248	8 268	6 120	4 950	881	2 148	1 954	989	779	2.57	3.04	291	279	12
Bethesda County	54 073	20 608	15 552	12 280	2 622	5 056	4 554	2 052	1 680	2.52	3.07	739	688	51
Bethesda County	7 921	2 996	2 333	1 958	261	663	592	255	194	2.64	3.03	112	112	—
Bethesda County	29 940	11 363	8 781	7 231	1 163	2 582	2 385	1 167	917	2.63	3.06	601	317	284
Bethesda County	93 516	34 345	26 914	22 284	3 712	7 431	6 208	2 071	1 628	2.72	3.09	6 982	472	6 510
Bethesda County	4 714	1 734	1 391	1 222	112	343	327	169	136	2.72	3.11	7	7	—
Bethesda County	16 011	5 841	4 621	3 745	680	1 220	1 119	558	437	2.74	3.13	1 289	1 289	—
Bethesda County	31 399	12 412	9 219	7 624	1 279	3 193	2 950	1 598	1 290	2.53	3.00	313	298	20
Bethesda County	17 435	6 734	5 266	4 404	645	1 468	1 368	745	581	2.59	2.99	201	192	9
Bethesda County	6 460	2 512	1 905	1 650	186	607	568	300	232	2.57	3.02	152	152	—
Bethesda County	4 494	1 786	1 310	1 105	169	456	430	239	184	2.52	2.			





# Water Resources Data Tennessee Water Year 1993

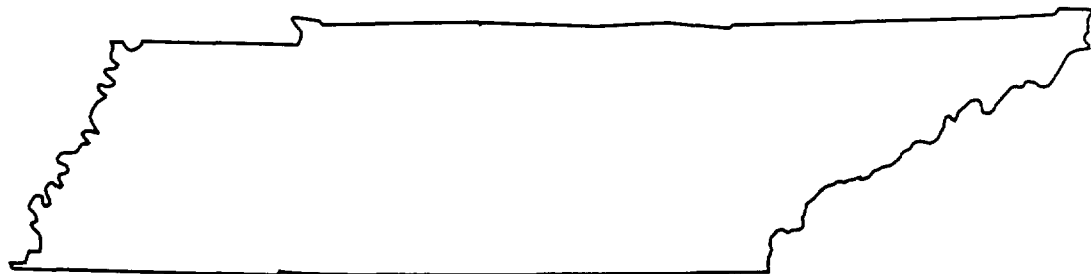
by D.F. Flohr, F.D. Edwards, J.G. Lewis, and R.A. Orr



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TN-93-1  
Prepared in cooperation with the State of Tennessee  
and with other agencies



# Water Resources Data Tennessee Water Year 1993



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TN-93-1  
Prepared in cooperation with the State of Tennessee  
and with other agencies

## TENNESSEE RIVER BASIN

## RESERVOIRS IN TENNESSEE RIVER BASIN--Continued.

03535900 MELTON HILL LAKE.--Lat 35°53'04", long 84°18'01", Loudon-Roane County line, Hydrologic Unit 06010207, 9 mi southwest of Oak Ridge, 19 mi west of Knoxville, 57 mi downstream from Norris Dam on Clinch River, and at mile 23.1 DRAINAGE AREA, 3,343 mi<sup>2</sup>. PERIOD OF RECORD, August 1962 to current year. GAGE, water-stage recorder. Datum of gage sea level.

REMARKS.--Reservoir is formed by concrete gravity dam. Spillway is equipped with three radial gates, each 42 ft high by 40 ft wide. Dam completed and storage began May 1, 1963; water in reservoir first reached minimum pool elevation May 23, 1963. Revised capacity table put into use Jan. 1, 1971. Total capacity at elevation 796 ft, top gates, is 63,500 cfs-days, of which 16,100 cfs-days is controlled storage above elevation 790.0 ft, normal minimum; Reservoir is used for navigation, power, and recreation.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 64,900 cfs-days, Mar. 16, 1973, elevation, 796.45 ft; minimum after first filling, 35,100 cfs-days, Feb. 9, 1966, elevation, 784.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 61,100 cfs-days, Mar. 29, elevation, 795.20 ft; minimum, 47,200 cfs-days, Feb. 4, elevation, 789.89 ft.

03543000 WATTS BAR LAKE.--Lat 35°37'13", long 84°47'00", Rhea County, Hydrologic Unit 06010201, at Watts Bar Dam on Tennessee River, 6.5 mi southeast of Spring City, 72.4 mi downstream from Fort Loudoun Dam, and at mile 529.9. DRAINAGE AREA, 17,310 mi<sup>2</sup>, approximately. PERIOD OF RECORD, October 1941 to current year. GAGE, water-stage recorder. Datum of gage is sea level.

REMARKS.--Reservoir is formed by concrete dam with riprapped earth embankments. Spillway equipped with 20 radial gates, each 32 ft high by 40 ft wide, also one 2-section leaf trashway gate 16.3 ft high by 24 ft wide. Storage began with partial closure Dec. 12, 1941, and final closure Jan. 1, 1942; water in reservoir first reached minimum navigation pool elevation Feb. 17, 1942. Revised capacity table put into use Jan. 1, 1971. Total level pool capacity at elevation 745.0 ft, top of gates, is 592,400 cfs-days, of which 191,000 cfs-days is controlled flood storage above elevation 745.0 ft, minimum navigation pool. Reservoir is used for navigation, flood control, and power.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 745.40 ft, Mar. 17, 1973; minimum after first filling, 733.4 ft, Mar. 20, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum midnight contents, 518,500 cfs-days, Nov. 5; maximum elevation, 741.47 ft, Nov. 5; minimum midnight contents, 411,300 cfs-days, Feb. 11; minimum elevation, 735.26 ft, Feb. 11. Contents based on backwater profile.

03564000 LAKE OCOEE.--Lat 35°05'40", long 84°38'53", Polk County, Hydrologic Unit 06020003, at Lake Ocoee Dam on Ocoee River at Parksville, 13.8 mi east of Cleveland, and at mile 11.9. DRAINAGE AREA, 595 mi<sup>2</sup>. PERIOD OF RECORD, June 1914 to current year. Prior to October 1953, published as "Parksville (Ocoee No. 1) Reservoir," and October 1953 to September 1968, as "Parksville Lake." GAGE, nonrecording gage. Datum of gage is 6.89 ft above sea level. Gage readings have been reduced to sea level.

REMARKS.--Reservoir is formed by concrete dam with 347 ft of spillway. Spillway is equipped with four floodgates each 6 ft high by 20 ft wide and 265 ft of flashboards about 5.7 ft high. Crest of spillway under gates is at elevation 830.82 ft; remainder of spillway is 1.0 ft higher. Dam completed and storage began in 1911. Capacity of reservoir has been considerably reduced by silting. Revised capacity table put into use Jan. 1, 1979. Total capacity at elevation 837.55 ft, about top of flashboards, is 42,300 cfs-days, of which 15,600 cfs-days is controlled storage above elevation 817.9 ft, normal minimum pool. Reservoir is used for power.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum midnight contents observed, 53,300 cfs-days, July 9, 1916; maximum midnight elevation observed, 840.2 ft, Feb. 10, 1946; minimum contents observed, 27,300 cfs-days, Jan. 27, 1956, elevation, 817.7 ft; minimum midnight elevation observed, 814.8 ft, Dec. 14, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 41,000 cfs-days, May 6, elevation, 836.6 ft; minimum 32,300 cfs-days, Jan. 18, elevation, 826.7 ft.

## MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

Date	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)	Elevation (feet)	Contents (cfs-days)	Change in contents (cfs-days)
03535900 MELTON HILL LAKE				*03543000 WATTS BAR LAKE			03564000 LAKE OCOEE		
Sept. 30...	794.10	57,900	-	740.45	498,400	-	834.3	38,700	-
Oct. 31...	793.59	56,500	-1,400	739.99	490,800	-7,600	834.7	39,100	+400
Nov. 30...	793.51	56,300	-200	736.83	434,100	-56,700	831.2	35,900	-3,200
Dec. 31...	793.50	56,200	-100	737.41	446,800	+12,700	832.2	36,800	+900
CAL YR 1992	-	-	-400	-	-	+32,500	-	-	+4,200
Jan. 31...	793.87	57,300	+1,100	736.87	434,800	-12,000	827.3	32,700	-4,100
Feb. 28...	793.95	57,500	+200	736.98	435,000	+200	828.4	33,600	+900
Mar. 31...	793.75	56,900	-600	736.61	431,600	-3,400	832.5	37,100	+3,500
Apr. 30...	794.14	58,000	+1,100	740.69	503,100	+71,500	835.9	40,300	+3,200
May 31...	794.42	58,800	+800	740.81	505,500	+2,400	834.5	38,900	-1,400
June 30...	793.84	57,200	-1,600	740.61	501,600	-3,900	835.1	39,500	+600
July 31...	793.52	56,300	-900	740.27	495,000	-6,600	834.8	39,200	-300
Aug. 31...	793.63	56,600	+300	740.22	494,000	-1,000	835.3	39,700	+500
Sept. 30...	793.73	57,200	+600	740.04	490,700	-3,300	834.7	39,100	-600
WTR YR 1993	-	-	-700	-	-	-7,700	-	-	+400

\* Contents based on backwater profile.

# FISHERIES REPORT

94-14

Reference 8

## COMMERCIAL FISHING REPORT 1993



By  
Robert M. Todd

Tennessee Wildlife



Resources Agency

TABLE 19

ESTIMATED 1993 HARVEST OF ALL FISH SPECIES COMBINED BY QUARTER  
REPORTED IN POUNDS

BODY OF WATER	JANUARY - MARCH	APRIL - JUNE	JULY - SEPTEMBER	OCTOBER - DECEMBER	ANNUAL HARVEST
BARKLEY	3,949	160,098	272,490	201,663	638,200
CHEATHAM	0	30,234	1,062	3,649	34,945
CHEROKEE	1,364	2,856	23,566	0	27,786
CHICKAMAUGA	0	202,652	120,897	79,265	402,814
DAVY CROCKET	0	0	0	0	0
DOUGLAS	219,434	154,647	89,581	147,876	611,538
FORT LOUDOUN	0	18,118	15,392	27,077	60,587
GUNTERSVILLE	21,703	0	0	3,857	25,560
JOHN SEVIER	0	0	0	0	0
KENTUCKY	213,059	474,114	501,861	766,916	1,955,950
NICKAJACK	20,883	63,789	0	65,571	150,243
OLD HICKORY	2,234	48,778	32,002	38,298	121,312
PICKWICK	13,789	63,003	85,249	54,087	216,128
REELFOOT	6,523	366	22,063	2,298	31,250
WATTS BAR	0	20,828	34,677	0	55,505
CHISHOLM	358	2,471	531	2,005	5,365
CRUTCHER	0	0	0	0	0
BRUTENS BR.	0	0	0	0	0
NORTH LAKE	0	0	0	0	0
OPEN LAKE	616	0	0	0	616
BEECH RIVER	0	0	0	0	0
CLINCH RIVER	0	0	26,184	0	26,184
CUMBERLAND	18,767	10,669	22,389	45,649	97,474
DUCK RIVER	0	1,500	1,657	0	3,157
EMORY RIVER	0	0	0	0	0
FORKED DEER	1,638	0	0	0	1,638
FRENCH BROAD	0	0	0	0	0
HARPETH	0	0	0	0	0
HATCHIE	11,859	11,786	946	12,508	37,099
HIWASSEE	0	0	67	0	67
HOLSTON	0	0	0	0	0
LOOSAHATCHIE	998	0	0	0	998
MISSISSIPPI	29,797	20,816	105,075	37,832	193,520
NOLICHUCKY	0	2,013	2,478	0	4,491
OBION RIVER	7,730	3,642	2,646	4,006	18,024
OLD RIVER	0	183	0	0	183
RED RIVER	0	212	0	0	212
SEQUATCHIE	0	0	0	0	0
WOLF RIVER	0	0	0	0	0
COLD CREEK	709	1,281	0	0	1,990
DEER CREEK	0	0	0	0	0
MORGAN CREEK	0	0	0	0	0
NIXON CREEK	0	0	0	0	0
POND CREEK	0	0	0	0	0
WEST FORK CK	0	0	0	0	0
ALL WATERS	575,410	1,294,056	1,360,813	1,492,557	4,722,836



BLACK & VEATCH Waste Science, Inc.

2300 Clayton Road  
Suite 1280  
Concord, California 94520-2100

**OVERSIZED**

**DOCUMENT**



**REPORT OF SURVEY FOR:  
THREATENED AND ENDANGERED SPECIES  
WETLANDS  
STREAM IDENTIFICATION  
AT A PROPOSED SOLID WASTE LANDFILL SITE  
BLAIR BEND INDUSTRIAL PARK,  
LOUDON COUNTY, TENNESSEE**

**Prepared for:  
Metal Resources, Inc.  
Blair Bend Industrial Park  
Loudon, Tennessee 37777**

**Prepared by:  
ERCE  
725 Pellissippi Parkway  
P.O. Box 22879  
Knoxville, Tennessee 37933-0879**

**ERCE # 03540903**

**December 1991**



## INTRODUCTION

Metal Resources, Inc. is seeking a permit for the construction of a solid waste landfill on a tract of property located in the Blair Bend Industrial Park, Loudon, Loudon County, Tennessee. This report addresses three specific regulatory compliance issues associated with regulations promulgated by the Tennessee Department of Environment and Conservation (TDEC), Division of Solid Waste Management. These three issues and applicable regulations are discussed in the following paragraphs.

### Endangered Species

Rule 1200-1-7-.04(2)(m) requires that:

Facilities shall be located, designed, constructed, operated, maintained, closed, and cared for during the post-closure care period in a manner that does not:

1. Cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife; or
2. Result in the destruction or adverse modification of the critical habitat of endangered or threatened species.

Rule 1200-1-7-.01(2) defines an endangered or threatened species as "any species listed in 50 *Code of Federal Regulations* (CFR) Part 17, as such list exists on the effective date of this Rule".

### Wetlands

Rule 1200-1-7.04(2)(p) states: "Facilities must not be located in a wetland".

### Streams

Rule 1200-1-8.04(3)(a), Buffer Zone Standards for Siting New Landfills, states:

[fill areas are at a minimum]...:

1. 200 feet from the normal boundaries of springs, streams, lakes, and other bodies of water (except that this standard shall not apply to any wet weather conveyance nor to bodies of water constructed and designed to be a part of the facility).

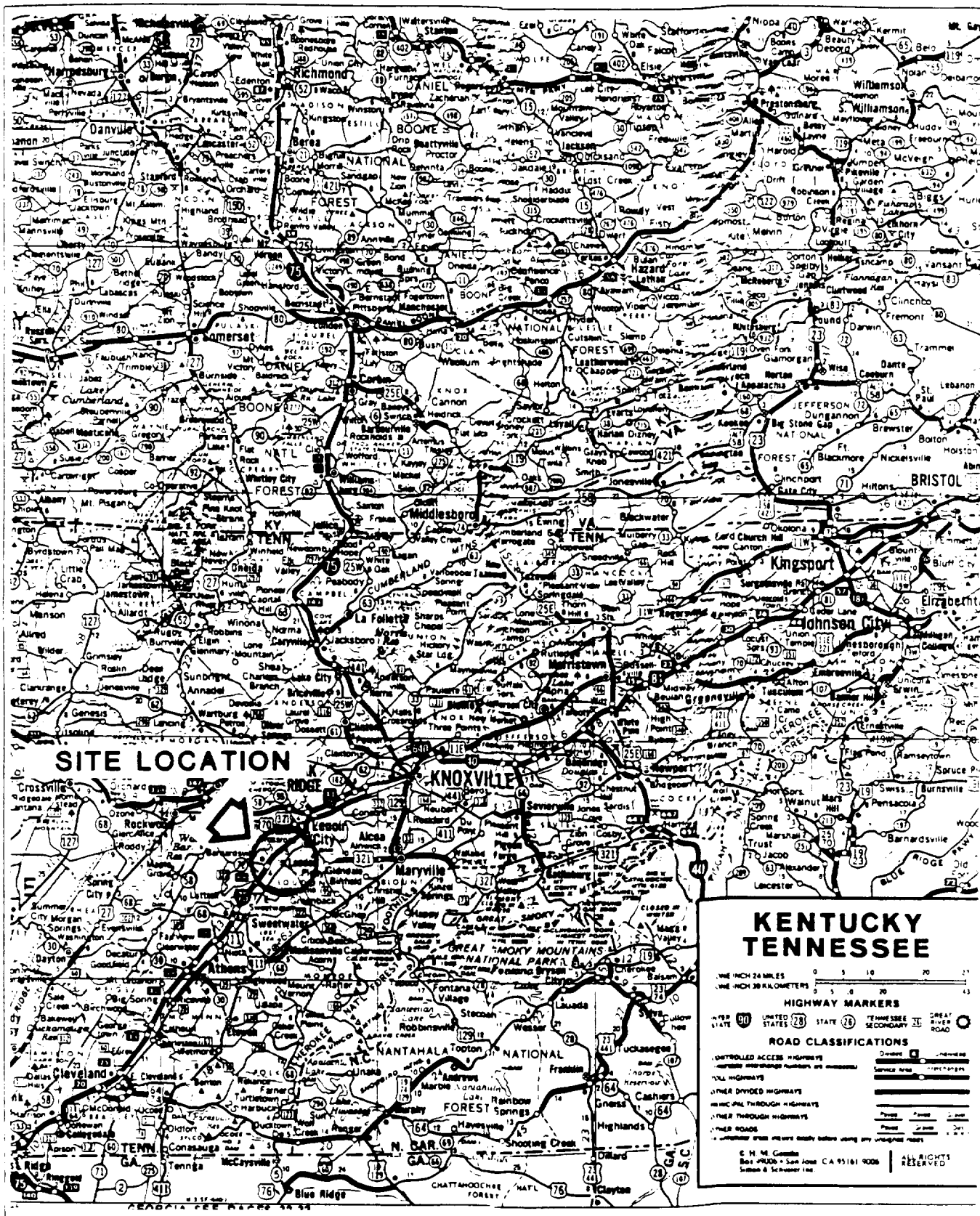
### **DESCRIPTION OF THE SURVEY AREA**

The subject tract is located near Loudon, in the central portion of Loudon County, Tennessee. Figure 1-1 is a depiction of the regional location, and Figure 1-2 depicts the site location within Loudon County.

As shown in Figure 1-3, topography on the subject tract ranges from approximately 750 feet above sea level to 900 feet above sea level; vegetation complexes present include oak-hickory forest, open fields from agricultural abandonment, second-growth cedar/hardwood forests, and vegetation associated with an abandoned home site.

### ENDANGERED SPECIES KNOWN FROM THE AREA

The Tennessee Wildlife Resources Agency (TWRA) is the regulating agency for endangered and threatened species of wildlife in Tennessee, with the division of Ecological Services of the



LOCATION OF LOUDON, TENNESSEE

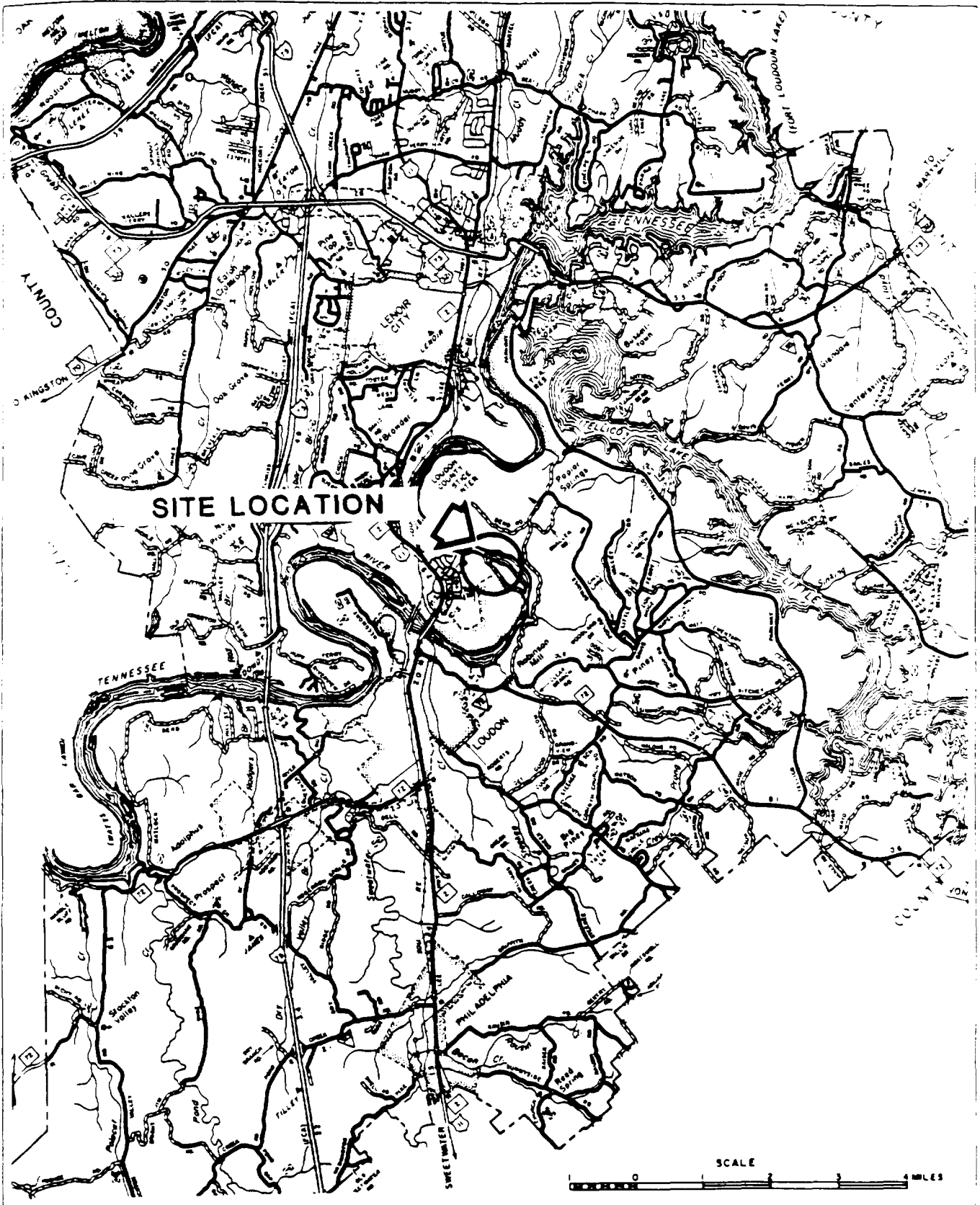
METAL RESOURCES INC  
PROJECT #13540903

4 5/91

SCALE: 1" = 24 MILES

Figure 1-1





SITE LOCATION  
 METAL RESOURCES INC  
 LOUDON, TENNESSEE  
 PROJECT #13540903  
 4/5/91

Figure 1-2

Tennessee Department of Conservation being the corresponding agency for plant species. Both of the agencies maintain lists of species listed as endangered or threatened by the Federal government. Consultations with these two agencies indicated that occurrences of listed species are tracked by county and, within counties, by the United States Geological Survey (USGS) 7.5' quadrangle maps.

The proposed location of the landfill is on the Loudon, TN, quadrangle. Accordingly, the Federal list of endangered and threatened species known to occur on that quadrangle were obtained. The list is given in Table 1. Of the two species listed, one is a mussel and the other is a fish species; both are known from the Tennessee River, which is located adjacent to the subject property.

#### Wetlands

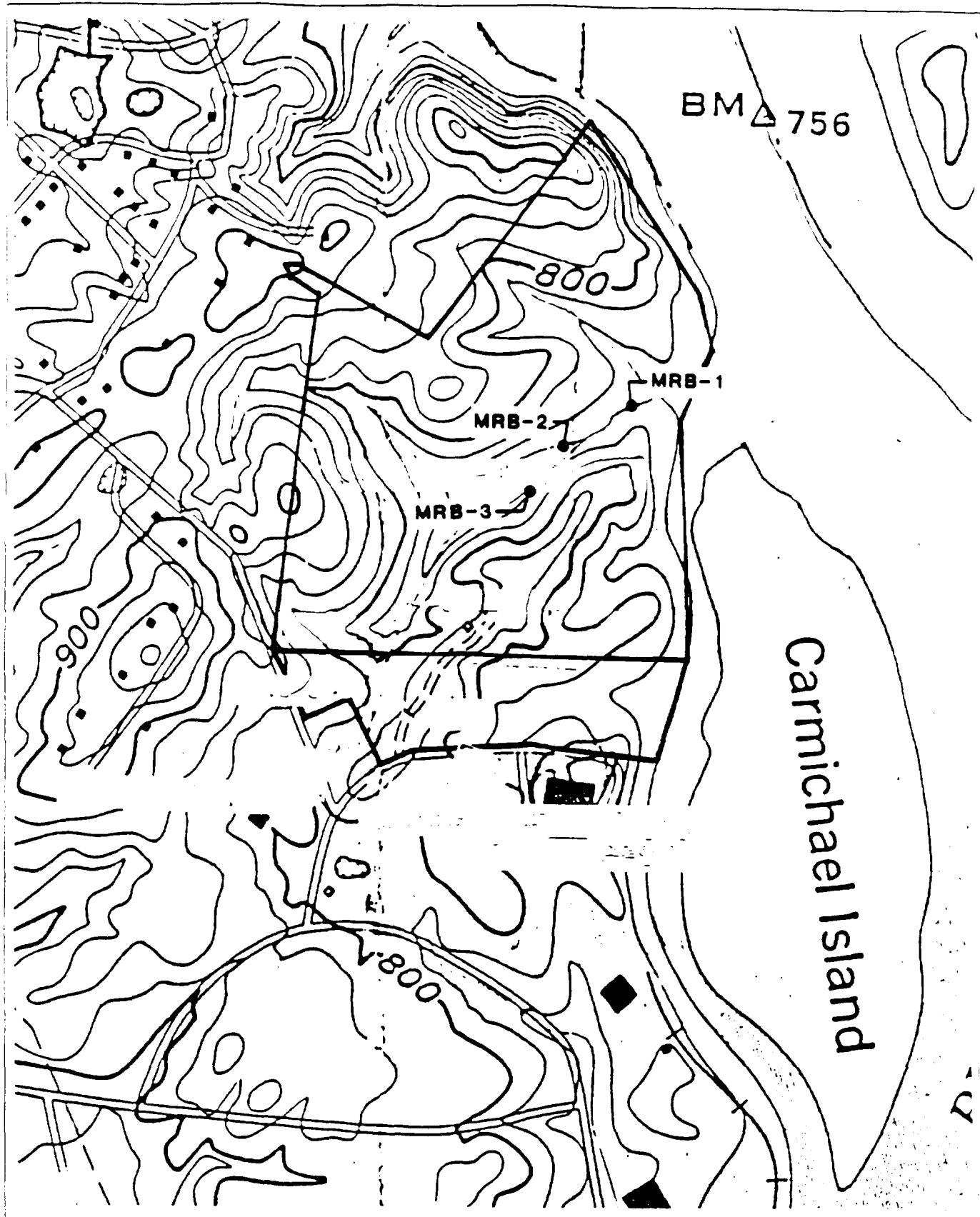
Copies of the National Wetlands Inventory Map for the Loudon, TN, quadrangle were obtained from the United States Department of Agriculture, Soil Conservation Service (SCS). The map showed no previously identified wetlands present on the subject property.

#### Streams

The USGS quadrangle for Loudon, TN, shows three "blue-line" streams present on the subject property (see Figure 1-3). As shown on that map, these streams drain the three major hollows present, merge, and exit the property at the eastern boundary, flowing directly into the Tennessee River.

**Table 1. Federally Listed Endangered And Threatened Species Known To Occur On The Loudon, TN, Quadrangle.**

Scientific Name	Common Name	Federal Status	State Status
<u>Percina tanasi</u>	Snail Darter	LT	T
<u>Lampsilis abrupta</u>	Pink Mucket Mussel	LE	E



**APPROXIMATE SAMPLING LOCATIONS**



METAL RESOURCES INC  
LOUDON, TENNESSEE  
PROJECT #13540903  
4/5/91  
NOT TO SCALE

Figure 1-3



## SURVEY RESULTS AND DISCUSSION

ERCE personnel visited the subject site on 7 July 1991. Although the only endangered and threatened species known to occur on the quadrangle were aquatic species, a systematic survey of the site was made to search for previously unknown occurrences of terrestrial species. In addition, earlier surveys of the tract conducted in April and May of 1991 were made to determine the presence of potential jurisdictional wetlands and "blue-line" streams. The results of these surveys were as follows:

No threatened or endangered species were observed. Of the two state listed plant species known from the Loudon quadrangle, Aster ericoides (White Heath Aster) and Isoetes macrospora (Lake Quillwort) neither individuals nor appropriate habitat was observed.

No potential jurisdictional wetlands were discovered. While portions of the proposed landfill site are situated in drainageways, no obligate hydrophytic plants were observed and few facultative hydrophytes were seen. Only one small body of standing water is present on the site. This approximately 20 feet by 20 feet area appears to be the result of previous construction activities on the southeastern boundary of the site. Appendix I contains the U.S. Army Corps of Engineers determination that no wetland hydrologic characteristics were observed on site.

Only one small reach of stream within the subject property was determined to be perennial in nature. This reach occurs below the confluence of the two major drainageways on the site. An investigation of the macroinvertebrate communities of the drainageways was conducted to assist in this conclusion. The results of this investigation are included as Appendix II. Figure 1-3 shows the locations of the benthic sampling sites. The reach of stream determined to be perennial lies approximately 1,200 feet from the closest proposed construction activities associated with the landfill. Personnel from the Tennessee Department of



Environment and Conservation (TDEC), Division of Solid Waste Management, visited the proposed site and determined that no jurisdictional waters of the state, other than the reach described above, were present.

As a result of all the surveys conducted, the development of the proposed landfill should not be affected by any of the regulatory constraints previously described.

May 24, 1991

Eastern Regulatory Field Office

SUBJECT: Wetlands Jurisdictional Determination at Tennessee  
River Mile 594.3R, Loudon County, Tennessee

Mr. Mike Morton  
Metal Resources, Inc.  
Post Office Box 386  
Loudon, Tennessee 37774

Dear Mr. Morton:

This refers to the recent request made on your behalf by Mr. Carlos Naranjo, of ERCE, for a jurisdictional determination of wetlands on your commercial property at Blair Bend Industrial Park, Loudon County, Tennessee. A May 22, 1991, onsite inspection revealed that the flagged area to the left of the current Metal Resources building, approximately one acre in size, is an upland area which does not contain wetland hydrologic characteristics. Therefore, a Department of the Army Permit will not be required for any proposed fill placement on the tract. This determination is valid for a period of two years from the date of this letter.

If you have further questions or comments, please contact this office at the above address or telephone (615) 986-7296.

Sincerely,

Catherine B. Elliott  
Manager, Eastern Field Office  
Operations and Readiness Division

Enclosure

Copy Furnished:

✓ Mr. Carlos Naranjo  
ERCE  
725 Pellissippi Parkway  
P.O. Box 22879  
Knoxville, Tennessee 37933

**APPENDIX II**  
**STREAM CHARACTERIZATION**

## STREAM CHARACTERIZATION

A characterization of potential blue-line streams present on the subject property was conducted in April, May, and July 1991. The scope of work for this characterization included:

- o A visual examination of streams which are shown on the Loudon quadrangle as "blue-line streams" to determine the presence/absence of surface flow;
- o Sampling of the streams and stream sediments for the possible presence of benthic macroinvertebrates;
- o The identification of any benthic macroinvertebrates present in the samples;

Results of the benthic characterization of Samples MRB-1, MRB-2, and MRB-3 are given in Table I of this Appendix. In total, the three samples contained 14 species represented by 95 individuals. The three stations are discussed below.

Station MRB-1, located below the confluence of the two major drainageways approximately 100 yards upstream from its entrance into the Tennessee River, contained the most species, 10, represented by 30 individuals. All species found in this sample are stream species and require well oxygenated flowing water to survive.

Station MRB-2 was located in the drainageway which enters from the northwestern portion of the subject site, approximately 100 feet upstream of the confluence of the two major drainageways. The location was within 10 yards of the point at which surface water was first present in this drainageway. The sample contained two species represented by seven individuals. Gammarus sp. is a species found in seep springs or small streams which remain cool

year round; the second species present (Ironoquia sp.) is found in small streams.

The third station, MRB-3, was located in the drainageway which drains from the southern most major hollow on the subject site. At the time of the sampling event, this drainageway displayed intermittent surface flow. The fauna found at this station consisted of four species represented by 58 individuals. Of the 58 individuals, however, 55 were of a single species. These species are considered semiaquatic and prefer damp or wet habitats rich in organic debris; the permanent presence of water is not a requirement for survival of these species.

### CONCLUSIONS

Consistent with the scope of work for the stream classification previously discussed, ERCE formulates the following conclusions based on the field work and analyses presented.

Identification of benthic invertebrate species present in samples taken from streams on the subject site indicate:

- o The stream reach downstream of the confluence of the two major drainageways should be considered a perennial stream. This reach is approximately 100 yards in length before it's entrance into the Tennessee River.
- o The drainageway which enters from the northwestern hollow on the subject site should be considered an intermittent stream from the point at which it appears on the surface. This point is approximately 100 feet upstream of the confluence of the two major drainageways on the site.

- o The drainageway which proceeds northeastward from the vicinity of Webb Road should be considered an ephemeral stream.
- o The small drain which slopes from the northeastern most hollow and empties below sample station # MRB-1 had no defined drainageway or streambed. No water was observed in this hollow during the course of all of the site visits. Therefore, no aquatic samples could be collected.

Table 1. Macroinvertebrates taken from standing water on the Blair Bend Industrial Park, Loudon County, Tennessee on April 3, 1991.

SPECIES	STATION		
	MRB-1	MBR-2	MBR-3
ANNELIDA			
Oligochaeta			
Lumbricidae			1
ARTHROPODA			
Crustacea			
Gammaridae			
Gammarus sp.		2	
Insecta			
Ephemeroptera			
Baetidae			
Baetis sp.	1		
Plecoptera			
Amphinemura sp.	2		
Trichoptera			
Limnephilidae			
Ironoquia sp.	1	5	
Diptera			
Chironomidae			
Cardiocladius obscurus	1		
Chaetocladius			
piger sp. gp.			55
Cricotopus			
tremulus sp. gp.	4		1
Orthocladius sp.	2		
Parametriocnemus			
lundbecki	2		
Thienemanniella xena	1		
Tvetenia			
discoloripes sp. gp.	14		
Tipulidae			
Ormosia sp.	2		
Pseudolimnophila sp.			1
TOTAL NO. OF ORGANISMS	30	7	58
TOTAL NO. OF SPECIES	10	2	4

LATITUDE	35:44:39	LONGITUDE	84:18:40	1983 POPULATION
----------	----------	-----------	----------	-----------------

TOTAL FOR THIS SESSION	\$ 0.3322
------------------------	-----------

NO CARRIER



C-586-2-0-222

March 1, 1990

Mr. A. R. Hanke  
Site Investigation and Support Branch  
Waste Management Division  
Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365

Date: \_\_\_\_\_  
Site Disposition: \_\_\_\_\_  
EPA Project Manager: \_\_\_\_\_

Subject: Screening Site Inspection, Phase I  
Metal Resources, Inc.  
Loudon, Loudon County, Georgia  
EPA ID No. TND991279746  
TDD No. F4-9001-171

Dear Mr. Hanke:

FIT 4 conducted a Phase I Screening Site Inspection of Metal Resources, Inc. in Loudon, Loudon County, Tennessee. This inspection included a review of state and EPA file material, a target survey, and an offsite reconnaissance of the property and surrounding areas.

Metal Resources, Inc. is located on Tennessee Highway 2 North in Loudon, Tennessee (Ref. 1). The facility began operations in 1981 and refines scrap aluminum (Ref. 2). The facility filed a RCRA part A application in 1981 and withdrew it in 1982 (Ref. 2).

Metal Resources, Inc. is located in the Valley and Ridge Physiographic Province north of Loudon, Loudon County, Tennessee (Ref. 3 p. 5). In this region the topography is shaped by broad thrust-fault hills trending northeast-southwest (Ref. 1). These direct surface water into a general northeast-southwest orientation. The Tennessee River bisects this target area from east to west, but \_\_\_\_\_ northward, or southward in response to differentially eroded thrust-related ridges (Ref. 1). The

climate is mild, and it has an annual rainfall of 12 inches with a 1-year, 24-hour rainfall of 3.0 inches (Ref. 4, p. 5; 5 p. 43, 63; 6 p. 93).

In this region groundwater is obtained from a regolith and fractured bedrock aquifer system. Beneath the study area the bedrock consists of dolomite Cambrian and Ordovician forms (Ref. 3, pp. 36-41). These types of aquifers commonly are not productive greater than 350 feet below land surface. Production is dependent on the presence of fractures, and it is estimated that wells can achieve 100 gallons per minute (Ref. pp. 40, 41). The aquifer beneath the facility is made up of fractured and solution dissolved portions of the dolomitic Newala Formation and its overlying sedimentary regolith. The residual clay sediments of the Newala Formation represent the layer of lowest hydraulic conductivity between the Cambrian aquifer and the surface. Sediments of this kind have been shown to have a hydraulic conductivity in the  $1 \times 10^{-7}$  to  $1 \times 10^{-9}$  cm/second (Ref. , p. 29). Groundwater would be expected to be surface. (Ref. ).

Four municipal water systems (Loudon System and the LeNoir City Water System) serve the site. The Loudon City Utilities obtain water from the Tennessee River (Ref. 1). The Loudon City Utilities obtain water from the Tennessee River (Ref. 1). A small municipal water source; however, the Tennessee River is a source of groundwater migration (Ref. 1). The area of coverage is south of the Tennessee River, and an area to the east of Loudon, north of the River. The system serves 2,500 connections or 9,500 persons (Refs. 1, ).

Metal

Region 2015

Figure

ee Utility Water within 4 miles of Lake, which is stream from the is also used as a or groundwater west of the city

The Piney Utility District obtains its water from a spring 2 miles south of the site. the spring is located on Clear Branch Road near Robinson Mill Road. Piney Utility also can purchase water from the Loudon City Utilities as a back up. the Tennessee River would act as a barrier to surface, or

groundwater migration from the facility site. this water system supplies water to 820 connections and has an area of coverage southeast of the city of Loudon (Refs. 1, ).

The Dixie Lee Utility System supplies municipal water to a small area north of the city of Loudon and has three different sources of water, from a spring four miles north of the facility, a surface water intakes on Ft. Loudon Lake and from LeNoir City Utility, which also obtains water from Ft. Loudon Lake. However, none of these water sources would be influenced by conditions due to distance from the study area (Refs. 1,)

The LeNoir City Utility System supplies municipal water to the northeastern portion of the study area. The LeNoir City Utility receives water from intakes on Ft. Loudon Lake intakes are upstream and beyond the 4-mile radius of the study area (Ref).

A map showing the extent of the municipal water distribution lines within the 4-mile radius is enclosed (Ref. 1). A house count taken from the appropriate topographic maps indicates that \_\_\_\_ homes or \_\_\_\_ persons are not served by the municipal systems in a 3-mile radius from the site. If a 4-mile radius is considered, there are \_\_\_\_ additional homes or \_\_\_\_ additional persons using groundwater. The closest private well to the site would be \_\_\_\_ feet to the \_\_\_\_ (Ref. 1).

The Metal Resources, Inc. facility is located on the side of a hill. Surface water would drain to the north.

Site conditions would not influence any surface water intakes used for municipal water supplies. The closest downstream surface water intakes are at Kingston and Rockwood. Both of these are more than 15 stream miles in distance from the site. The Tennessee River is used recreationally for fishing, swimming and boating (Refs.).

Land use within the 4-mile radius of the facility would include single-family residential housing, which is adjacent to the property and commercial/industrial/institutional use in the of Loudon and LeNoir City. Outside the two city limits, land is rural in nature (Ref. 1), with the closest residence being within \_\_\_\_ feet (Ref. ). The population within 1 mile is estimated to be \_\_\_\_ persons and within 4 miles is \_\_\_\_ persons (Ref. ). the number of workers at the facility is not known.

Endangered species and sensitive habitats are listed as being in Loudon County. The slackwater darter (Etheostoma boschungii) and the snail darter (Percuna tanasi) are classified as threatened in Loudon County. In addition, the white warty-back psarly mussel (Plethobasus cicatricoccus) is listed as endangered in the Tennessee River (Ref. ).

Based on the results of this evaluation and the attached reference material, FIT 4 recommends that no further remedial action be planned for the Metal Resources, Inc., facility. Please contact me at NUS Corporation if you have and questions about this site.

Very truly yours,

Approved:

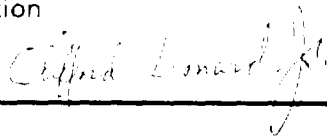
Clifford Leonard, Jr.  
Project Manager

\_\_\_\_\_

CL/ma

Enclosures

CC: Kelly Cain

**NUS CORPORATION AND SUBSIDIARIES****TELECON NOTE****CONTROL NO.****DATE:** 1-30-90**TIME:** 11:40**DISTRIBUTION:****BETWEEN:** Mike Strange**OF:** LeNoir City Water Assoc.**PHONE:** (615) 986-6591**AND:** Clifford Leonard, Jr., NUS Corporation**DISCUSSION:**

LeNoir City Water service is limit to the city limits and extends east on U.S. Highway 321.

NUS CORPORATION AND SUBSIDIARIES		TELECON NOTE
CONTROL NO.	DATE: 11-15-90	TIME: 9:50 a.m.
DISTRIBUTION:		
BETWEEN: Stanley McCall	OF: McCall Drillers	PHONE: (615) 986-3683
AND: Clifford Leonard, Jr., NUS Corporation		
DISCUSSION:		
<p>You can expect to find groundwater in the Loudon City area at between 70 and 75 feet below land surface.</p>		

## Metal Resources

- Talked to Marty Hertz
- Knoxville DSWM at site in August '83 - No hazardous waste on-site

## - Directions

From Knoxville: I40-75 west

Take 75 south

Exit on Sugar Lem Road

Proceed East till road dead ends into U.S. 11

Head towards Loudon, go ~ 1 mile to small business area

Site is a white building (old car dealership)

Texaco across street

If you cross a bridge in the business area you've gone too far

## Metal Resources

1st Day of production - May 24, 1981

Undeveloped farmlands prior to Metal Resources

Taken to:

Pat Hertzel - Secretary

Freeman Russel - Plant Supervisor

Luther James - Shift Supervisor



REGION: 04  
STATE : TN

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 157  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

M.2 - SITE MAINTENANCE FORM

		* ACTION: _	*
EPA ID : TND991279746			
SITE NAME: METAL RESOURCES INC	SOURCE: H	* _____	*
STREET : BLAIR BEND INDUSTRIAL PARK	CONG DIST: 02	* _____	*
CITY : LOUDON	ZIP: 37774	* _____	*
CNTY NAME: LOUDON	CNTY CODE : 105	* _____	*
LATITUDE : 35/44/30.0	LONGITUDE : 084/20/00.0	* __/__/__.	*
LL-SOURCE: R	LL-ACCURACY:	* _	*
SMSA :	HYDRO UNIT: 06010201	* _____	*
INVENTORY IND: Y	REMEDIAL IND: Y	REMOVAL IND: N	FED FAC IND: N
NPL IND: N	NPL LISTING DATE:	NPL DELISTING DATE:	
SITE/SPILL IDS:			
RPM NAME:	RPM PHONE: - -	* _____	*
SITE CLASSIFICATION:	SITE APPROACH:	* _____	*
DIOXIN TIER:	REG FLD1:	REG FLD2: 6	
RESP TERM: PENDING ( )	NO FURTHER ACTION ( )	* PENDING ( )	NO FURTHER ACTION ( )
ENF DISP: NO VIABLE RESP PARTY ( )	VOLUNTARY RESPONSE ( )	* _	
ENFORCED RESPONSE ( )	COST RECOVERY ( )	* _	
SITE DESCRIPTION:			
	* _____		
	* _____		
	* _____		
	* _____		

REGION: 04  
STATE : TN

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 158  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

M.2 - PROGRAM MAINTENANCE FORM

SITE: METAL RESOURCES INC

EPA ID: TND991279746 PROGRAM CODE: H01 PROGRAM TYPE:

PROGRAM QUALIFIER: ALIAS LINK :

PROGRAM NAME: SITE EVALUATION

DESCRIPTION:

\* ACTION: \_

\*

\*

\*

\*

\*

\*

\*

REGION: 04  
STATE : TN

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 159  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

## M.2 - EVENT MAINTENANCE FORM

SITE: METAL RESOURCES INC  
PROGRAM: SITE EVALUATION

EPA ID: TND991279746 PROGRAM CODE: H01

EVENT TYPE: DS1

FMS CODE: EVENT QUALIFIER :

EVENT LEAD: E

EVENT NAME: DISCOVERY

STATUS:

**DESCRIPTION:**

\* ACTION: \_

ORIGINAL

**CURRENT**

**ACTUAL**

**START:**

**START:**

**START:**

**COMP :**

**COMP :**

COMP : 11/01/80

**HQ COMMENT:**

**RG COMMENT:**

COOP AGR #

**AMENDMENT #**

STATUS

STATE %

0

\* \_ \* \*

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REGION: 04  
STATE : TN

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 160  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

## M.2 - EVENT MAINTENANCE FORM

SITE: METAL RESOURCES INC  
PROGRAM: SITE EVALUATION

EPA ID: TND991279746 PROGRAM CODE: H01

EVENT TYPE: PA1

FMS CODE: EVENT QUALIFIER :

EVENT LEAD: S

EVENT NAME: PRELIMINARY ASSESSMENT

**STATUS:**

**DESCRIPTION:**

\* ACTION: \_\_\_\_\_

**ORIGINAL**

**CURRENT**

**ACTUAL**

**START:**

**START:**

START: 01/01/84

COMP :

COMP :

COMP : 08/01/84

**HQ COMMENT:**

RG COMMENT:

COOP AGR #

AMENDMENT #

STATUS

STATE X

0

[illegible]

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 161  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

## M.2 - EVENT MAINTENANCE FORM

\* ACTION: \_\_\_\_\_

SITE: METAL RESOURCES INC  
PROGRAM: SITE EVALUATION

EPA ID: TND991279746 PROGRAM CODE: H01

EVENT TYPE: SI1

FMS CODE: EVENT QUALIFIER :

EVENT LEAD: S

EVENT NAME: SITE INSPECTION

**STATUS:**

**DESCRIPTION:**

**ORIGINAL**

**CURRENT**

**ACTUAL**

**START:**

**START:**

START: 06/01/84

COMP :

COMP :

COMP : 08/01/84

**HQ COMMENT:**

**RG COMMENT:**

COOP AGR #

**AMENDMENT #**

**STATUS**

STATE %

0

REGION: 04  
STATE : TN

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF EMERGENCY AND REMEDIAL RESPONSE  
C E R C L I S V 1.2

PAGE: 162  
RUN DATE: 02/06/87  
RUN TIME: 09:25:40

M.2 - COMMENT MAINTENANCE FORM

SITE: METAL RESOURCES INC

EPA ID: TND991279746

COM  
NO COMMENT

001 PART A- ON FILE

ACTION

*	-	_____	*
*		_____	*





POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN D991279746

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, Common, or descriptive name of site)  
Metal Resources, Incorporated Blair Bend Industrial Park/U.S. 11  
03 CITY Loudon  
04 STATE TN 05 ZIP CODE 37774 06 COUNTY Loudon  
07 COUNTY CODE 105 08 CONG DIST 02  
09 COORDINATES  
LATITUDE 35 44 40.8 LONGITUDE 084 19 26.0  
10 TYPE OF OWNERSHIP (Check one)  
☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL  
☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION 6/8/84  
MONTH DAY YEAR  
02 SITE STATUS  
☒ ACTIVE ☐ INACTIVE  
03 YEARS OF OPERATION  
1981 - UNKNOWN  
BEGINNING YEAR ENDING YEAR

04 AGENCY PERFORMING INSPECTION (Check all that apply)  
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR  
☒ E. STATE ☐ F. STATE CONTRACTOR ☐ G. OTHER  
Name of firm: Specific:

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Ken Davis	Geologist I	Tenn Dept. Health + Environ.	(615) 741-6287
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Karen Bonner	Chemist I	Tenn Dept. Health + Environ.	(615) 741-6287
			( )
			( )
			( )
			( )

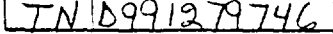
13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Mr. Freeman Russel	Plant Supervisor	Metal Resources	(615) 458-2007
Mr. Luther James	Shift Supervisor	Metal Resources	(615) 458-2007
Mrs. Pat Hertzell	Secretary	Metal Resources	(615) 458-2007
			( )
Site Inspection Completed - No Further Action			( )
			( )

17 ACCESS GAINED BY (Check one)  
☒ PERMISSION ☐ WARRANT  
18 TIME OF INSPECTION 12:00 noon  
19 WEATHER CONDITIONS ~90°, Sunny, No Wind Present

IV. INFORMATION AVAILABLE FROM

01 CONTACT Mr. Marty Hertzell	02 OF Agency Organization Metal Resources, Inc.	03 TELEPHONE NO. (615) 458-2007
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM Kenneth R. Davis	05 AGENCY Tenn Dept. H. and E.	06 ORGANIZATION D.S.W.M.
	07 TELEPHONE NO. (615) 741-6287	08 DATE 6/13/84 MONTH DAY YEAR







POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN 15991279746

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN D991279746

II. HAZARDOUS CONDITIONS AND INCIDENTS *(continued)*

01 ☐ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION *(include names of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
*(Spills, Runoff, Standing liquids, Leaking drums)*  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL, UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., State files, Sample analysis, reports)*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION  
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN D991279746

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER (Specify)	
<input type="checkbox"/> I. OTHER (Specify)				06 AREA OF SITE _____(Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one):  
☐ A. ADEQUATE, SECURE    ☐ B. MODERATE    ☐ C. INADEQUATE, POOR    ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☐ NO  
02 COMMENTS

VI. SOURCES OF INFORMATION (Give specific references, e.g., state files, sample analysis, reports)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 0991279740

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY  
(Check as applicable)

SURFACE WELL  
COMMUNITY A. ☐ B. ☐  
NON-COMMUNITY C. ☐ D. ☐

02 STATUS

ENDANGERED AFFECTED MONITORED  
A. ☐ B. ☐ C. ☐  
D. ☐ E. ☐ F. ☐

03 DISTANCE TO SITE

A. \_\_\_\_\_ (mi)  
B. \_\_\_\_\_ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING  
Other sources available:  
COMMERCIAL, INDUSTRIAL, IRRIGATION  
No other water sources available  
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION  
Limited other sources available  
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER

03 DISTANCE TO NEAREST DRINKING WATER WELL

04 DEPTH TO GROUNDWATER

05 DIRECTION OF GROUNDWATER FLOW

06 DEPTH TO AQUIFER  
OF CONCERN

07 POTENTIAL YIELD  
OF AQUIFER

08 SOLE SOURCE AQUIFER

☐ YES ☐ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

10 RECHARGE AREA

☐ YES ☐ NO  
COMMENTS

11 DISCHARGE AREA

☐ YES ☐ NO  
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION  
DRINKING WATER SOURCE  
☐ B. IRRIGATION, ECONOMICALLY  
IMPORTANT RESOURCES  
☐ C. COMMERCIAL, INDUSTRIAL  
☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:

AFFECTED

DISTANCE TO SITE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (mi)  
\_\_\_\_\_ (mi)  
\_\_\_\_\_ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE

TWO (2) MILES OF SITE

THREE (3) MILES OF SITE

A. \_\_\_\_\_  
NO. OF PERSONS

B. \_\_\_\_\_  
NO. OF PERSONS

C. \_\_\_\_\_  
NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

\_\_\_\_\_ (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

04 DISTANCE TO NEAREST OFF-SITE BUILDING

\_\_\_\_\_ (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 15991279746

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A.  $10^{-5} - 10^{-3}$  cm/sec ☐ B.  $10^{-4} - 10^{-5}$  cm/sec ☐ C.  $10^{-4} - 10^{-3}$  cm/sec ☐ D. GREATER THAN  $10^{-3}$  cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE  
Less than  $10^{-9}$  cm/sec ☐ B. RELATIVELY IMPERMEABLE  
 $10^{-4} - 10^{-9}$  cm/sec ☐ C. RELATIVELY PERMEABLE  
 $10^{-2} - 10^{-4}$  cm/sec ☐ D. VERY PERMEABLE  
Greater than  $10^{-2}$  cm/sec

03 DEPTH TO BEDROCK

\_\_\_\_\_ (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

\_\_\_\_\_ (ft)

05 SOIL pH

06 NET PRECIPITATION

\_\_\_\_\_ (in)

07 ONE YEAR 24 HOUR RAINFALL

\_\_\_\_\_ (in)

08 SLOPE

SITE SLOPE

\_\_\_\_\_ %

DIRECTION OF SITE SLOPE

TERRAIN AVERAGE SLOPE

\_\_\_\_\_ %

09 FLOOD POTENTIAL

SITE IS IN \_\_\_\_\_ YEAR FLOODPLAIN

10

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

A. \_\_\_\_\_ (mi)

B. \_\_\_\_\_ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

\_\_\_\_\_ (mi)

ENDANGERED SPECIES: \_\_\_\_\_

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS: NATIONAL STATE PARKS,  
FORESTS, OR WILDLIFE RESERVES

AGRICULTURAL LANDS  
PRIME AG LAND AG LAND

A. \_\_\_\_\_ (mi)

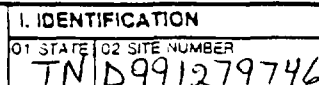
B. \_\_\_\_\_ (mi)

C. \_\_\_\_\_ (mi)

D. \_\_\_\_\_ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)



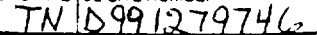
SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

01 TYPE	02 COMMENTS

01 TYPE <input type="checkbox"/> GROUND <input type="checkbox"/> AERIAL		02 IN CUSTODY OF _____ <i>Name of organization or individual</i>
03 MAPS <input type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS _____	

--

\_\_\_\_\_







C1 STATE	J2 SITE NUMBER
----------	----------------

TN D991279746

EPA FORM 2070-13 (7-81)



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN 10991279746

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE	
05 CITY	06 STATE 07 ZIP CODE	

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

V. SOURCES OF INFORMATION Cite specific references, e.g., State files, sample analysis, reports



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN D991279746

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ D. SPILLED MATERIAL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ E. CONTAMINATED SOIL REMOVED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ F. WASTE REPACKAGED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ G. WASTE DISPOSED ELSEWHERE  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ H. ON SITE BURIAL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ I. IN SITU CHEMICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ J. IN SITU BIOLOGICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ K. IN SITU PHYSICAL TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ L. ENCAPSULATION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ M. EMERGENCY WASTE TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ N. CUTOFF WALLS  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ P. CUTOFF TRENCHES/SUMP  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ Q. SUBSURFACE CUTOFF WALL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN D991279746

II PAST RESPONSE ACTIVITIES *(continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ S. CAPPING/COVERING  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ T. BULK TANKAGE REPAIRED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ U. GROUT CURTAIN CONSTRUCTED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ V. BOTTOM SEALED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ W. GAS CONTROL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ X. FIRE CONTROL  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ Y. LEACHATE TREATMENT  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ Z. AREA EVACUATED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ 1. ACCESS TO SITE RESTRICTED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ 2. POPULATION RELOCATED  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

01 ☐ 3. OTHER REMEDIAL ACTIVITIES  
04 DESCRIPTION

02 DATE \_\_\_\_\_

03 AGENCY \_\_\_\_\_

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

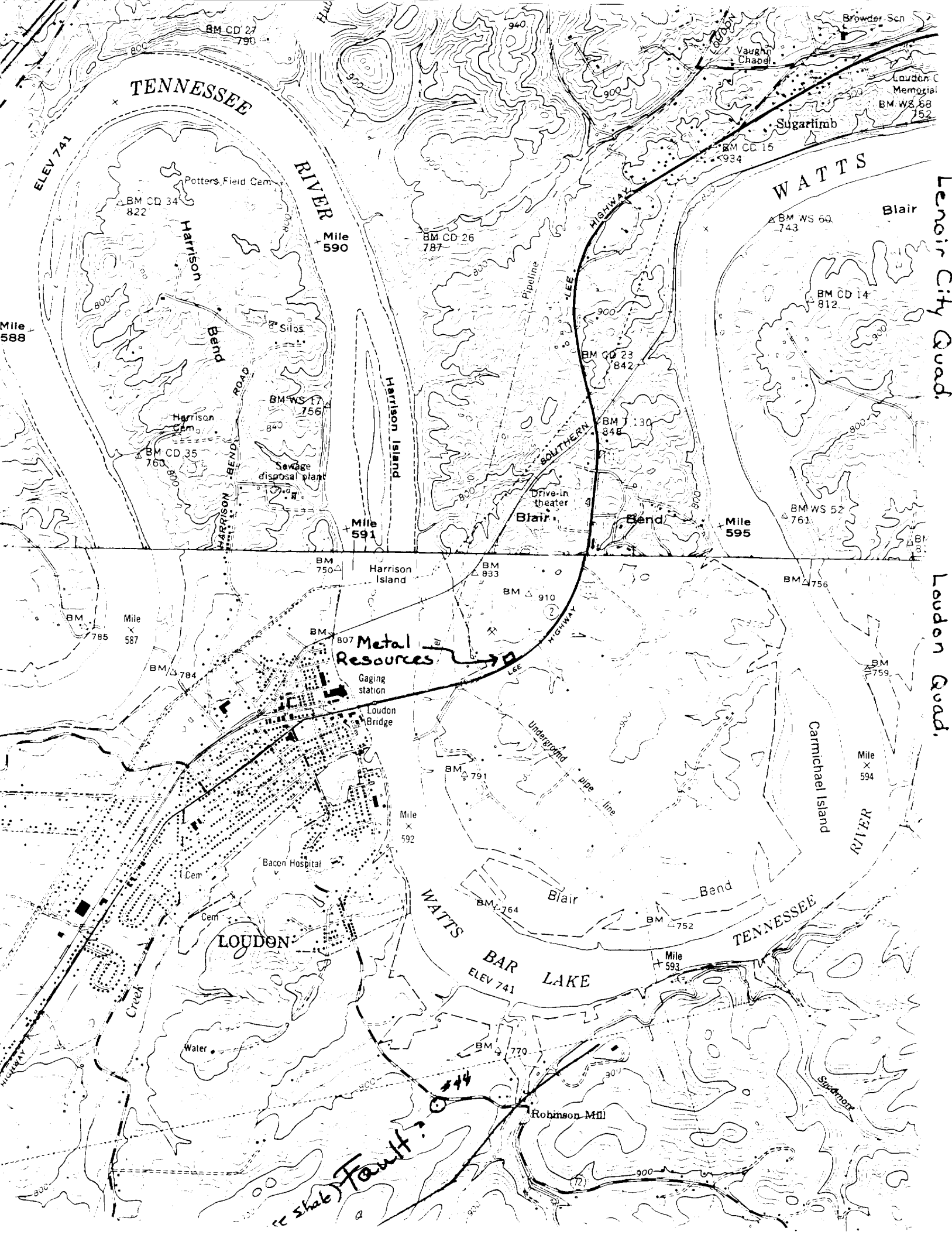
01 STATE	02 SITE NUMBER
TN	D991279746

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, lab analysis, reports)





POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN TND991279746

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)

Metal Resources Inc

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER

PO Box 386 Blount County Tenn TN 37714

03 CITY

Loudon

04 STATE

05 ZIP CODE

06 COUNTY

07 COUNTY

08 CONG DIST

TN

37714

Loudon

09 COORDINATES LATITUDE

LONGITUDE

10 DIRECTIONS TO SITE (Starting from nearest public road)

III. RESPONSIBLE PARTIES

01 OWNER (If known)

02 STREET (Business, mailing, residential)

03 CITY

04 STATE

05 ZIP CODE

06 TELEPHONE NUMBER

( )

07 OPERATOR (If known and different from owner)

08 STREET (Business, mailing, residential)

09 CITY

10 STATE

11 ZIP CODE

12 TELEPHONE NUMBER

( )

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: / / MONTH DAY YEAR ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / MONTH DAY YEAR ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

BY (Check all that apply)

☐ YES DATE / / MONTH DAY YEAR

☐ NO

☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: (Specify)

CONTRACTOR NAME(S):

02 SITE STATUS (Check one)

☐ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

BEGINNING YEAR ENDING YEAR

☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

none A has been investigated and found they are not generators  
no hazardous waste

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on the available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT

02 OF (Agency, Organization)

03 TELEPHONE NUMBER

( )

04 PERSON RESPONSIBLE FOR ASSESSMENT

05 AGENCY

06 ORGANIZATION

07 TELEPHONE NUMBER

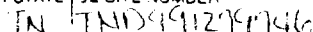
08 DATE

Walter Rennie

PAH

(615) 941-6000

11-10-97  
MONTH DAY YEAR



<input type="checkbox"/> A TOXIC	<input type="checkbox"/> E SOLUBLE	<input type="checkbox"/> I HIGHLY VOLATILE
<input type="checkbox"/> B CORROSIVE	<input type="checkbox"/> F INFECTIOUS	<input type="checkbox"/> J EXPLOSIVE
<input type="checkbox"/> C RADIOACTIVE	<input type="checkbox"/> G FLAMMABLE	<input type="checkbox"/> K REACTIVE
<input type="checkbox"/> D PERSISTENT	<input type="checkbox"/> H IGNITABLE	<input type="checkbox"/> L INCOMPATIBLE
		<input type="checkbox"/> M NOT APPLICABLE





POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

TN TND9912-8146

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_ (Acres) 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

IN INDCY 12 79 46

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION (include names of species)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
(Spills/runoff/standing liquids/leaking drums)

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

☐ POTENTIAL

☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., STATE REG. SAMPLE ANALYSIS, RECORDS)



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER  
TN | TND991279746

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) Metal Resources, Inc		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER P.O. Box 386 Blount Industrial Park			
03 CITY London	04 STATE TN	05 ZIP CODE 37774	06 COUNTY London	07 COUNTY CODE 105	08 CONG DIST 02
09 COORDINATES LATITUDE _____		LONGITUDE _____			

10 DIRECTIONS TO SITE (Starting from nearest public road)

III. RESPONSIBLE PARTIES

01 OWNER (If known)		02 STREET (Business, mailing, residential)			
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER ( )		
07 OPERATOR (If known and different from owner)		08 STREET (Business, mailing, residential)			
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ( )		

13 TYPE OF OWNERSHIP (Check one)

- ☒ A. PRIVATE   ☐ B. FEDERAL: \_\_\_\_\_ (Agency name)   ☐ C. STATE   ☐ D. COUNTY   ☐ E. MUNICIPAL  
☐ F. OTHER: \_\_\_\_\_ (Specify)   ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

- ☐ A. RCRA 3001 DATE RECEIVED: \_\_\_\_/\_\_\_\_/\_\_\_\_ MONTH DAY YEAR   ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: \_\_\_\_/\_\_\_\_/\_\_\_\_ MONTH DAY YEAR   ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input type="checkbox"/> YES DATE ____/____/____ MONTH DAY YEAR <input type="checkbox"/> NO		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR ____ ENDING YEAR ____ <input type="checkbox"/> UNKNOWN			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Part II has been withdrawn as of 8/11/82. They are not generators of hazardous waste

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

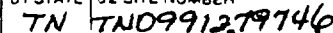
V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

- ☐ A. HIGH (Inspection required promptly)   ☐ B. MEDIUM (Inspection required)   ☐ C. LOW (Inspect on time available basis)   ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency, Organization)		03 TELEPHONE NUMBER ( )	
04 PERSON RESPONSIBLE FOR ASSESSMENT Karen Penner	05 AGENCY DSWM	06 ORGANIZATION	07 TELEPHONE NUMBER 16151741-6287	08 DATE 11-30-83 MONTH DAY YEAR



<input type="checkbox"/> A TOXIC	<input type="checkbox"/> E SOLUBLE	<input type="checkbox"/> I HIGHLY VOLATILE
<input type="checkbox"/> B CORROSIVE	<input type="checkbox"/> F INFECTIOUS	<input type="checkbox"/> J EXPLOSIVE
<input type="checkbox"/> C RADIOACTIVE	<input type="checkbox"/> G FLAMMABLE	<input type="checkbox"/> K REACTIVE
<input type="checkbox"/> D PERSISTENT	<input type="checkbox"/> H IGNITABLE	<input type="checkbox"/> L INCOMPATIBLE
		<input type="checkbox"/> M NOT APPLICABLE



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE

02 SITE NUMBER

TN

TN099127746

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ B. SURFACE WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ C. CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ E. DIRECT CONTACT

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ F. CONTAMINATION OF SOIL

03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_  
(Acres)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ G. DRINKING WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ H. WORKER EXPOSURE/INJURY

03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

01 ☐ I. POPULATION EXPOSURE/INJURY

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
TN TND991279746

I. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
(Spills/runoff/standing liquids/leaking drums)

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

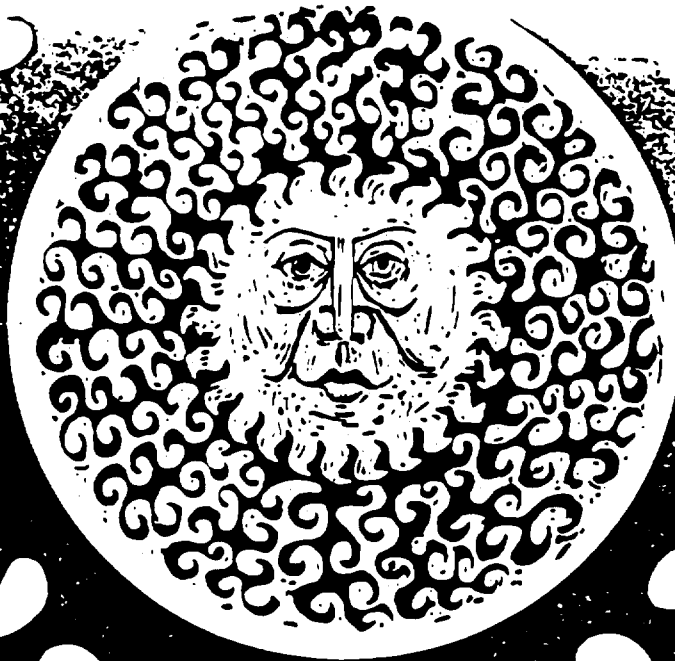
02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

6. TOTAL POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

7. COMMENTS

8. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis reports)



# CLIMATIC ATLAS OF THE UNITED STATES

RCE • Environmental Science Services Administration • Environmental Data Service



**U.S. DEPARTMENT OF COMMERCE**  
**C. R. Smith, Secretary**

**ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION**  
**Robert M. White, Administrator**

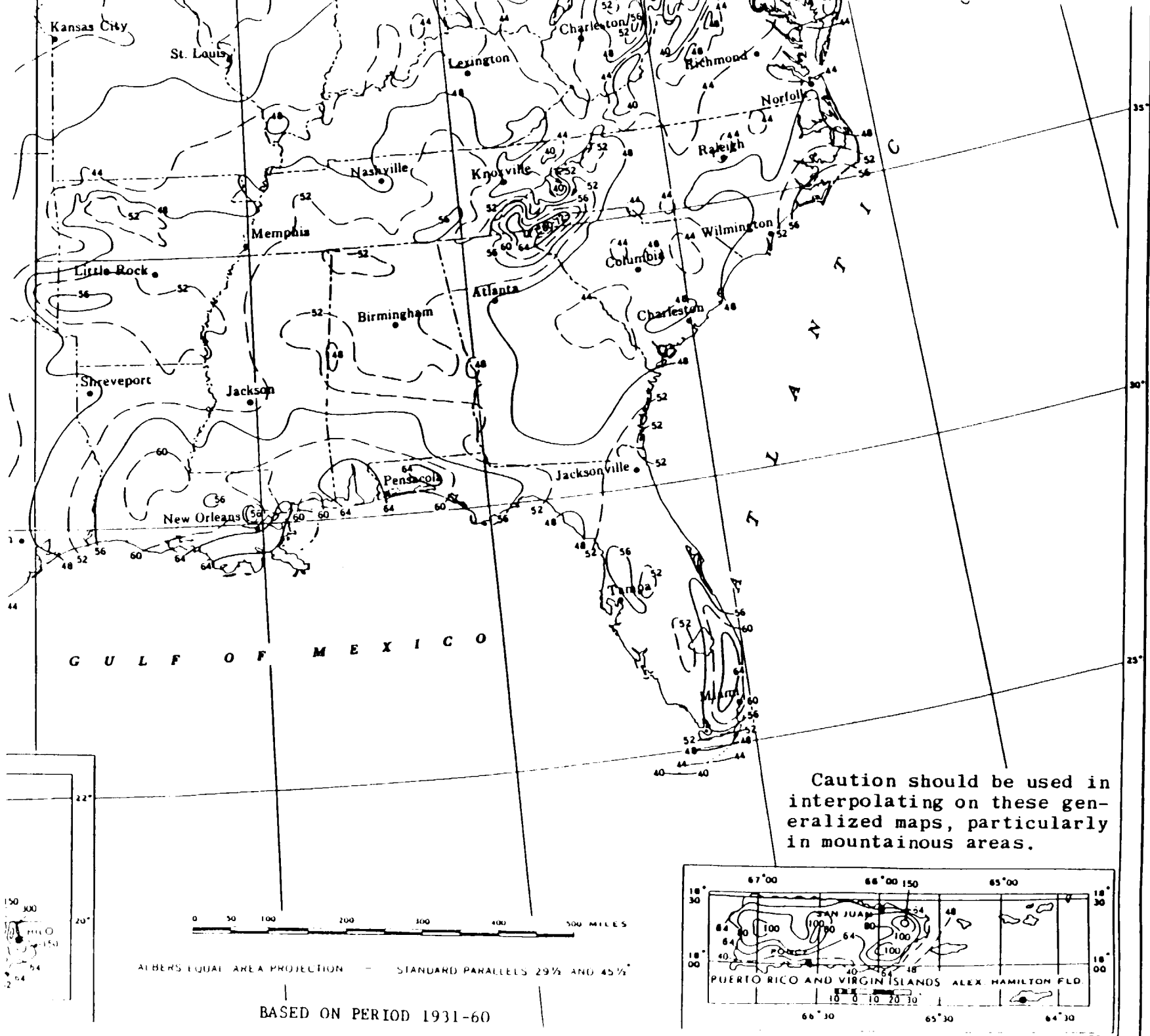
**ENVIRONMENTAL DATA SERVICE**  
**Woodrow C. Jacobs, Director**

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**JUNE 1968**

**REPRINTED BY THE**  
**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**1983**

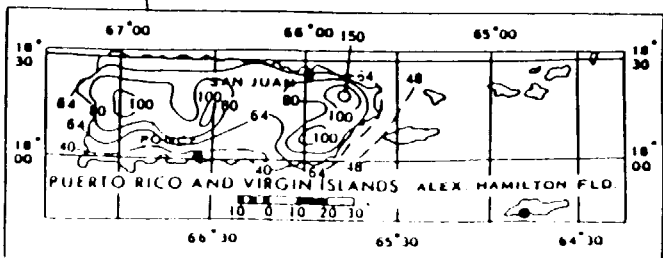




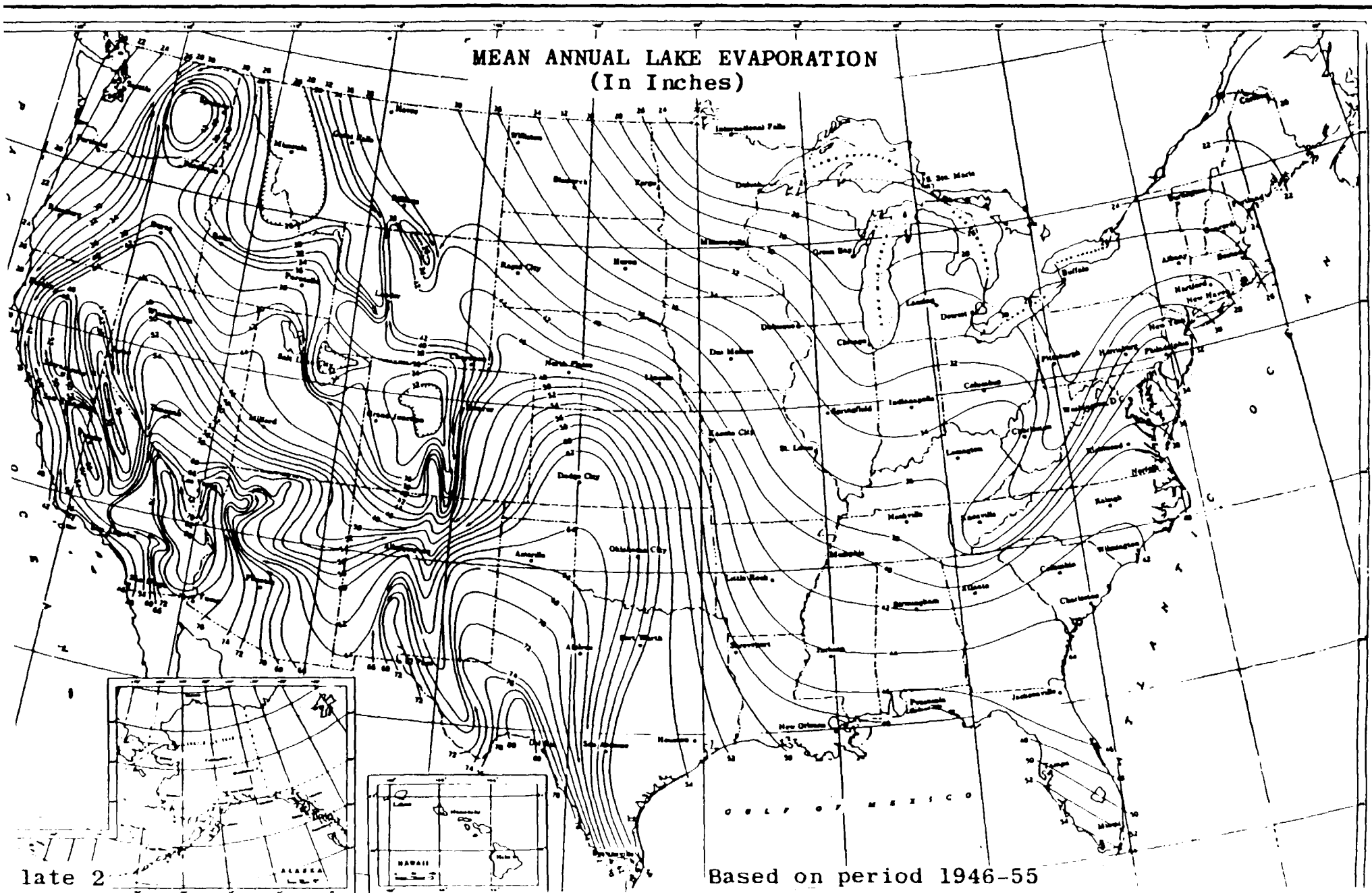
Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

ALBERS EQUAL AREA PROJECTION - STANDARD PARALLELS 29° AND 45°

BASED ON PERIOD 1931-60



## LIQUID EVAPORATION





**R. Allan Freeze**

Department of Geological Sciences  
University of British Columbia  
Vancouver, British Columbia

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University of Waterloo  
Waterloo, Ontario

**GROUNDWATER**

Prentice-Hall, Inc.  
Englewood Cliffs, New Jersey 07632

*Library of Congress Cataloging in Publication Data*

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Groundwater.

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10 9 8

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conductance  
petroleum  
substituted

**Table 2.2 Range of Values of Hydraulic Conductivity and Permeability**

Rocks	Unconsolidated deposits					
		$k$ (darcy)	$k$ (cm <sup>2</sup> )	$K$ (cm/s)	$K$ (m/s)	$K$ (gal/day/ft <sup>2</sup> )
Karst limestone Permeable basalt Fractured igneous and metamorphic rocks Limestone and dolomite Sandstone	Gravel	$10^5$	$10^{-3}$	$10^2$		
		$10^4$	$10^{-4}$	$10$	$10^{-1}$	$10^6$
		$10^3$	$10^{-5}$	$1$	$10^{-2}$	$10^5$
		$10^2$	$10^{-6}$	$10^{-1}$	$10^{-3}$	$10^4$
		$10$	$10^{-7}$	$10^{-2}$	$10^{-4}$	$10^3$
		$1$	$10^{-8}$	$10^{-3}$	$10^{-5}$	$10^2$
		$10^{-1}$	$10^{-9}$	$10^{-4}$	$10^{-6}$	$10$
		$10^{-2}$	$10^{-10}$	$10^{-5}$	$10^{-7}$	$1$
		$10^{-3}$	$10^{-11}$	$10^{-6}$	$10^{-8}$	$10^{-1}$
		$10^{-4}$	$10^{-12}$	$10^{-7}$	$10^{-9}$	$10^{-2}$
Unfractured metamorphic and igneous rocks Shale Unweathered marine clay Glacial till	Silty sand Clean sand	$10^{-5}$	$10^{-13}$	$10^{-8}$	$10^{-10}$	$10^{-3}$
		$10^{-6}$	$10^{-14}$	$10^{-9}$	$10^{-11}$	$10^{-4}$
		$10^{-7}$	$10^{-15}$	$10^{-10}$	$10^{-12}$	$10^{-5}$
		$10^{-8}$	$10^{-16}$	$10^{-11}$	$10^{-13}$	$10^{-6}$
						$10^{-7}$

**Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units**

	Permeability, $k^*$			Hydraulic conductivity, $K$			
	cm <sup>2</sup>	ft <sup>2</sup>	darcy	m/s	ft/s	U.S. gal/day/ft <sup>2</sup>	
cm <sup>2</sup>	1	$1.08 \times 10^{-3}$	$1.01 \times 10^8$	$9.80 \times 10^{-2}$	$3.22 \times 10^3$	$1.85 \times 10^9$	
ft <sup>2</sup>	$9.29 \times 10^2$	1	$9.42 \times 10^{10}$	$9.11 \times 10^3$	$2.99 \times 10^6$	$1.71 \times 10^{12}$	
darcy	$9.87 \times 10^{-9}$	$1.06 \times 10^{-11}$	1	$9.66 \times 10^{-6}$	$3.17 \times 10^{-5}$	$1.82 \times 10^1$	
m/s	$1.02 \times 10^{-3}$	$1.10 \times 10^{-6}$	$1.04 \times 10^5$	1	3.28	$2.12 \times 10^6$	
ft/s	$3.11 \times 10^{-4}$	$3.35 \times 10^{-7}$	$3.15 \times 10^4$	$3.05 \times 10^{-1}$	1	$6.46 \times 10^5$	
U.S. gal/day/ft <sup>2</sup>	$5.42 \times 10^{-10}$	$5.83 \times 10^{-13}$	$5.49 \times 10^{-2}$	$4.72 \times 10^{-7}$	$1.55 \times 10^{-6}$	1	

\*To obtain  $k$  in ft<sup>2</sup>, multiply  $k$  in cm<sup>2</sup> by  $1.08 \times 10^{-3}$ .

ALSO  
check  
MRS MANUAL

# CERCLA ELIGIBILITY QUESTIONNAIRE

Site Name: METAL RESOURCES, INC.

City: London

State: TENNESSEE

EPA ID Number: TXD 99 1274746

## I. CERCLA ELIGIBILITY

Yes

No

Did the facility cease operations prior to November 19, 1980?

—

✓

If answer YES, STOP, facility is probably a CERCLA site.

If answer NO, Continue to Part II.

## II. RCRA ELIGIBILITY

Yes

No

Did the facility file a RCRA Part A application?

✓

—

If YES:

1. Does the facility currently have interim status?

✓

—

2. Did the facility withdraw its Part A application?

—

✓

3. Is the facility a known or possible protective filer?  
(facility filed in error)

—

—

4. Type of facility:

Generator \_\_\_\_\_ Transporter \_\_\_\_\_ Recycler \_\_\_\_\_

TSD (Treatment/Storage/Disposal) \_\_\_\_\_

Does the facility have a RCRA operating or post closure permit?

—

—

Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (facility did not know it needed to file under RCRA)

—

—

If all answers to questions in Part II are NO, STOP, the facility is a CERCLA eligible site.

If answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If answer #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

## III. RCRA SITES ELIGIBLE FOR NPL

Yes

No

Has the facility owner filed for bankruptcy under federal or state laws?

—

—

Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?

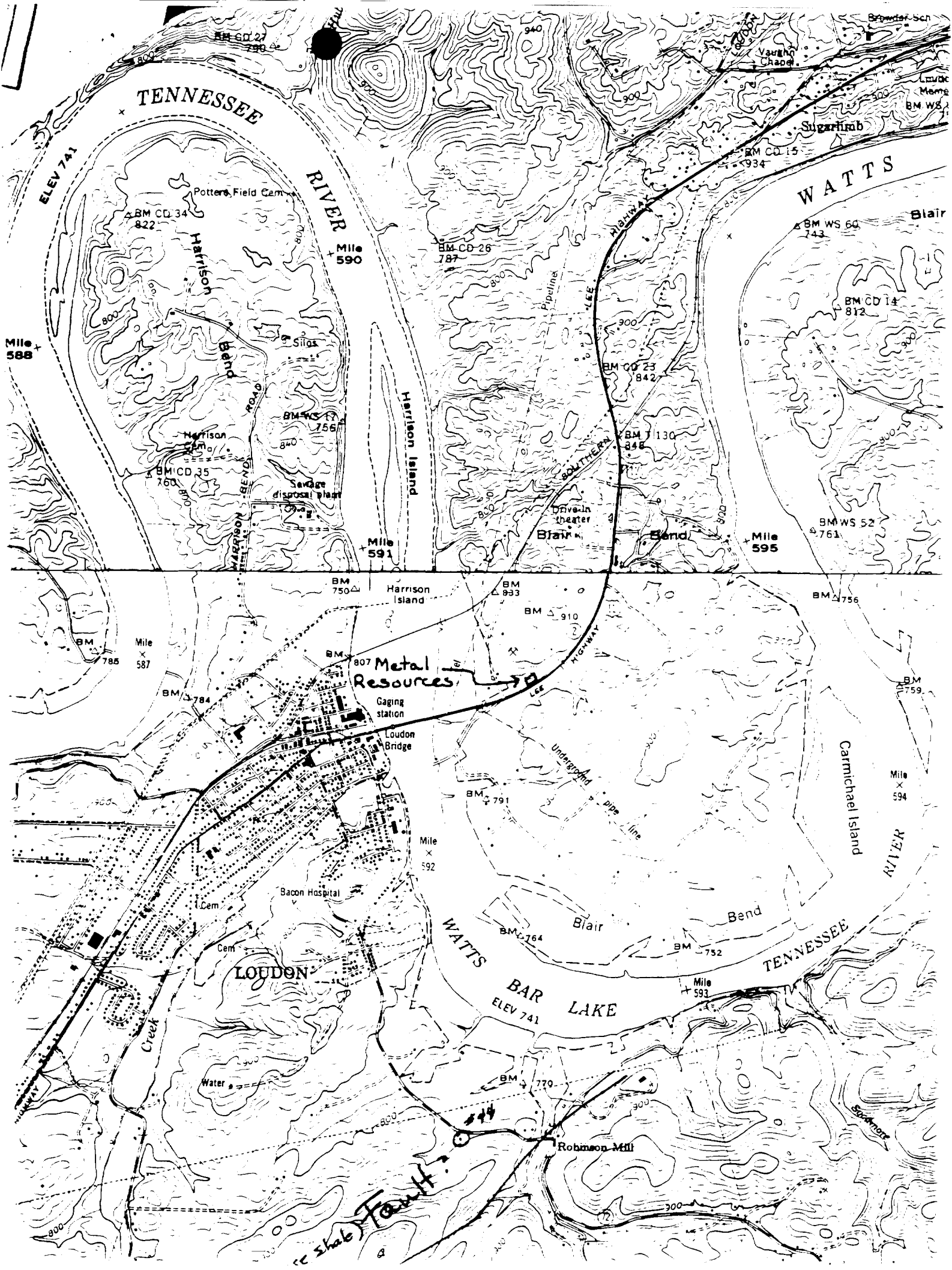
—

—

Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?

—

—



Enter the next ring distance  
GEMS> 6.4

Enter the next ring distance  
GEMS>

COVERAGE  
=====

STATE	COUNTY	STATE NAME	COUNTY NAME
47	105	Tennessee	Loudon Co
47	145	Tennessee	Roane Co

CENTER POINT AT STATE : 47 Tennessee  
COUNTY : 105 Loudon Co

Press RETURN key to continue...

REGION OF THE COUNTRY  
=====

Zipcode found: 37774 at a distance of 0.9 Km

STATE	CITY NAME	FIPSCODE	LATITUDE	LONGITUDE
TN	LOUDON	47105	35.7417	84.3333

Press RETURN key to continue ...

CENSUS DATA  
=====

METAL RESOURCES  
LATITUDE 35:44:41 LONGITUDE 84:19:26 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	0	0	2222	0	2222
S 2	0	0	0	0	0	0	0
S 3	0	0	0	0	0	0	0



S 5	0	0	0	0	0	0	0
S 6	0	0	1437	834	1658	0	3929
S 7	0	0	0	0	0	0	0
S 8	0	0	0	61	0	0	61
-----							
RING	0	0	1437	909	4914	0	7260
TOTALS							

Press RETURN key to continue ...

#### STAR STATION

=====

INDEX NUMBER	STATION NAME	LATITUDE DEGREE	LONGITUDE DEGREE	PERIOD OF RECORD	STABILITY CLASSES	DISTANCE (km)
13891	KNOXVILLE TN	35.8167	83.9833			6 31.72
13882	CHATTANOOGA/LOVELL T	35.0333	85.2000			6112.00
03814	CORBIN KY	36.9667	84.1333			6136.82
03812	ASHEVILLE NC	35.4333	82.5333			6165.43
13877	BRISTOL/TRI CITY TN	36.4833	82.4000			6191.17
93846	ANDERSON/COUNTY SC	34.5000	82.7167			6201.12
03870	GREENVILLE-SPARTANBU	34.9000	82.2167			6212.61

Press RETURN key to continue ...

#### U.S. SOIL DATA

=====

STATE : TENNESSE

LATITUDE : 35:44:41      LONGITUDE : 84:19:26  
THE STATION IS INSIDE H.U.      6010201

GROUND WATER ZONE	:	8		
RUNOFF SOIL TYPE	:	2		
EROSION	:	1.5560E-03		CM/MONTH
DEPTH TO GROUND WATER BETWEEN	:	9.1440E+02	AND	4.5720E+03
FIELD CAPACITY FOR TOP SOIL	:	7.2000E-02		
EFFECTIVE POROSITY BETWEEN	:	1.0000E-02	AND	1.0000E-01
SEEPAGE TO GROUNDWATER BETWEEN	:	4.6330E+02	AND	9.2660E+02
DISTANCE TO DRINKING WELL	:	2.6000E+04		CM

Press RETURN key to continue ...

#### U.S. CITY

=====

STATE	PLACE NAME	FIPSCODE	LATITUDE	LONGITUDE
TN	LOUDON	47105	35.7417	84.3333

Press RETURN key to continue ...

MENU: Geodata Handling Data List procedures

- |                                 |            |
|---------------------------------|------------|
| 1. Site level retrieval of data | (SITERET)  |
| 2. Access Census Data           | (CENSUS)   |
| 3. Determine County Coverage    | (COVERAGE) |
| 4. Determine Station Coverage   | (STATION)  |

1. HUCODE/SOIL locator	(HUCODE)
2. Convert to Lat/Long	(LATLON)
3. Lookup/Examine Star Station Data	(STAR)
8. Find US cities	(USCITY)
9. Find Soil Survey Status of Counties	(SSURVEY)

Enter an option number or a procedure name (in parentheses)  
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR  
GEMS>

Enter an option number or a procedure name (in parentheses)  
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR  
GEMS>

Enter an option number or a procedure name (in parentheses)  
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR  
GEMS> EXIT

Type YES to confirm the EXIT command; type NO to restart GEMS  
GEMS> YES

\$

\$ LOGOUT

WRT logged out at 29-JAN-1990 13:01:17.13  
Itemized resource charges, for this session, follow:

NODE: VAXTM1	
ACCT: NTIS	START TIME: 29-JAN-1990 12:56:10.03
PROJ: NTISNUCN	FINISH TIME: 29-JAN-1990 13:01:17.13
USER: WRT	BILLING PERIOD: 900101
UID: 1000750,0001121	WEEKDAY: MONDAY
BAUD:	TERMINAL PORT: VTA181

DESCRIPTION OF CHARGE	QUANTITY	EXPENDITURE
-----		
ALL CHARGE LEVELS		
300 baud (Seconds)	307	0.7675
CPU TIME (Seconds)	6	0.3967
		-----
TOTAL FOR THIS SESSION		\$ 1.1642

NODE 3157 HOST 1038: DROPPED BY HOST  
please log in: X

error, type user name:

**OVERSIZED**

**DOCUMENT**